TB CARE II

USAID TB CARE II Project

Core Annual Report Year

October, 1 2013- September 30, 2014

University Research Co., LLC

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
CLA	Canadian Lung Association
CLSI	Clinical and Laboratory Standards Institute
DOTS	Directly Observed Treatment Short-course
EHG	Euro Health Group
HIV	Human Immunodeficiency Virus
IPC	Infection Prevention and Control
ISTC	International Standards for Tuberculosis Care
MCH	Maternal and Child Health
MDRTB	Multi Drug Resistance Tuberculosis
M&E	Monitoring and Evaluation
MoH	Ministry of Health
NGO	Non Governmental Organization
NJGTBI	New Jersey Global Tuberculosis Institute
NTP	National Tuberculosis Program
PIH	Partners In Health
PMDT	Programmatic Management of Drug-resistant TB
PMTCT	Prevention of Mother to Child Transmission
QA	Quality Assurance
TAC	Technical Assistance Center
TAT	Turn-around Time
TB	Tuberculosis
URC	University Research Co., LLC
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

In project year 4 (FY14), TB CARE II continued work on a diverse range of activities, many of them building on earlier work and focused around strengthening and enhancing products and lessons developed from earlier investments. Several notable activities were initiated this year, including targeted field work in Vietnam and Tajikistan around infection control, implemented in collaboration with local stakeholders and already demonstrating results. The core portfolio included an array of capacity building activities, several of which including the DR TB Learning Site, the Design to Health casebook, and the TB Refresher Course for Physicians incorporate web-based on eHealth learning systems. In total, through core funds in Year 4 the project reached more than 3700 individuals with capacity building activities.

The activities successfully blended the array of talents and skills brought by the consortium members and included inputs from stakeholders at the country level as well partners within the TB CARE I team. The transition between Year 3 and Year 4 activities was generally smooth, as many activities were designed to build in a stepwise manner on previous efforts. Several challenges were experienced as described in the activity reports in the following sections, most which result from unexpected delays due to securing necessary approvals, i.e., for study related IRBs, government clearances, and similar challenges. Several year 3 activities were still active in year 4, although the bulk of activities have ended and will shift to a Year 5 implementation phase (such as the IPT study, the DR TB training site, and the IC case book), while others such as the ethics study, the translation of the pediatric field guide, and development of the mobile application for the MDR TB pocket guide should be completed in Q1 of Year 5.

Year 5, which is the projects' final year, will focus on completing current efforts and bringing projects to a point where they can be sustainable or continued through other means. A considerable focus will be placed this year on developing the information and learning packages which summarize and explain the lessons gained through 5 years of implementation on these activities, and seeking out forums and opportunities to share information, materials, and products with the TB control community so that they can continue to benefit from the project's investments.

OVERVIEW

Progress and Significant Achievements

TB CARE II experienced a busy and overall successful Year 4, involving a wide range of diverse activities. The project had a significant presence at the 44rd Word Lung Health Conference in Paris, France.

Some of the main achievements of the year are summarized below:

- Effective models for IPT delivery for children and adults: As part of its multi-year TB CARE II activity reviewing and describing best practices for the delivery of IPT, the Dartmouth team has had an article published in the BMC Infectious Diseases journal, highlighting the results of an overview of systematic reviews which was conducted to compare different organizational interventions to improve IPT delivery. The article can be found here: http://www.biomedcentral.com/1471-2334/14/281. Following this work, Dartmouth is working with URC in Swaziland to study of IPT delivery models based on patient preferences to improve IPT outcomes.
- Launch of TB Infection Control Demonstration Site in Tajikistan: TB CARE II through its partner Project HOPE has officially launched an activity to develop an IC demonstration site in Tajikistan. A launch event was held Dushanbe in April which was attended by the USAID Deputy Chief of Mission, the Ministry of Health and other stakeholders. The full story can be read here: http://www.stoptb.org/news/frompartners/2014/fp14_028.asp
- Infection Control Building Design Casebook: In Year 4 TB CARE II continued to support the Design to Heal site, which is aimed at documenting building design approaches to airborne infection control in a variety of global settings. Featured through an online database (www.designtoheal.org), the project brings together case studies of health facilities and defines design considerations and strategies for airborne infection control. As of 2013, the Design to Heal database featured case studies of health facilities in six countries across Sub-Saharan Africa, Eastern Europe, South America, and the Caribbean. In March 2014, MASS Design Group, the project facilitator, collected two additional case studies in Ethiopia at the ALERT Hospital and the St. Peter TB Specialized Hospital, both located in Addis Ababa. At each site, an in-depth facility evaluation was conducted, incorporating building performance assessments as well as interviews and discussions with healthcare administrators, facility managers, clinical staff, and operations/maintenance staff.
- Pocket guide for the Medical Management of MDR-TB: The MDR-TB pocket guide has been completed. *The PIH Guide to the Medical Management of Multidrug-Resistant Tuberculosis, 2nd Edition*, was published in English early in 2014. It is available in three formats: print, PDF, and online e-Book.
- DR TB Training Network: The DR-TB Training Network hosted 15 webinars in Year 4 and there are now 6 self-study activities. The webinars included 6 on pediatric DR-TB topics in English, 3 on TB IC topics in English, 5 on TB IC topics in Russian, and 1 in French on the basics of MDR-TB management. In addition, the case discussion series hosted by the DR-TB Training Network has concluded with 34 cases covering a variety

of clinical and psychosocial topics relevant to the treatment of DR-TB, with additional guidance provided by a bevy of experts from TB CARE I and II partner organizations.

- Building Capacity for Infection Control: The infection control consultant clearinghouse was launched in August 2013 as the TB Design Roster to link TB IC consultants with projects that need their expertise. There are currently 42 consultant profiles with 18 viewable to members of GHDonline.org indicating these consultants are available and willing to be contacted. There were 2206 page views of the TB Design Roster in Year 4.
- Global Leadership: TB CARE II staff and partners also participated in several global leadership forums this quarter including the 14th Strategic and Technical Advisory Group for Tuberculosis (STAG-TB) meeting from June 16-18, 2014 followed by the annual TB TEAM Meeting from June 18-19, 2014, attended by Dr. Refiloe Matji, TB CARE II Project Director. Ms. Alisha Smith-Arthur took part in the Joint WHO/Global Fund Workshop on Scaling up Public-Private Mix (PPM) for TB Care and Control in New Delhi, India from June 25-27, 2014. Two staff from TB CARE II partner BEA undertook a consultation to support TB CARE II staff in Bangladesh to strengthen documentation of project activities at the field level through Digital Documentation Kits in April. TB CARE II also responded to a request from USAID to assist with placement of a consultant, Mr. Henk Eggens, to review progress on TB activities in Mozambique. The consultancy has been undertaken and Mr. Eggens will travel to Mozambique in Q4. Finally, TB CARE II supported six TB PROOF staff's participation at the IUATLD conference in Paris, France.

Dissemination and Information Sharing

The PMSG in collaboration with BEA has worked steadily to include fresh content and promote the project website, while continuing to develop additional features to increase functionality and usability and to direct more users to the site. The use of the site as a TB resource is evident in the analysis provided below.

Table 1. Analytics, TB CARE II website

OCTOBER 1, 2013 TO SEPTEMBER 30, 2014	
Visits	14,265
Unique visitors	10,982
Page views	35,258
New visitors	24%
Average pages per visit	2.47
Average minutes: seconds per visit	03:29
Mobile device visits	2,371

Arrived by search engine	54%
File downloads	1,632
Top countries of visitors	Bangladesh 49%; US 12%; India 6% Philippines 3%; Netherlands 2%
Top cities of visitors	Dhaka, Khulna, Mumbai
Popular page visits (other than homepage)	Bangladesh country page 4,827; Employment opportunities 3,078;Announcements 1,954 PMDT 991; National Guidelines Mgt Child TB 844; Search 696; TB DOTS 628

Please see **Appendix 1** for details a breakdown of users and participants of the activities on the DR TB Learning Site.

Implementation status

At the end of the annual reporting period, the core activities were at various stages of completion as follows:

Table 2. Status of TB CARE II Core Activities

Year 1	Activity name	Lead partner	Status	Comments
1.1.3	Develop methods to evaluate the frequency and causes of delays	URC	Complete/ Closed	
1.1.4	Develop approaches for system wide quality improvement of TB services	URC	Complete/ Closed	
2.1.1	Map existing network of PMDT centers of excellence and strengthen existing centers	PIH	Complete/ Closed	
2.1.2	Develop practical tools describing step by step implementation of community based PMDT	PIH	Complete/ Closed	
2.1.3	Develop training SOPs and training tools for the care and support of MDR TB patients	PIH	Complete/ Closed	

3.1.4	Develop and implement workers' compensation policy and package	URC	Complete/ Closed	
4.2.1	Develop tool for increasing TB screening, prompt diagnosis, and access to treatment at HIV services	Jhpiego	Complete	Ongoing dissemination continuing to take place
7.2	Create tools to enable annual strategic planning review/evaluation and build capacity of NTP to carry out these activities	GTBI	Anticipated completion Q1 Year 5	
7.3	Explore national insurance programs where TB can be included to motivate/incentivize universal coverage	URC	Complete/ Closed	
Year 2	**Activity name**	**Lead partner**	**Status**	**Comments**
1.1	TB Patient's Rights Charter	URC	Complete/ Closed	
1.2	Improving TB Care Services through IPT Administration to Eligible Children and Adults	Dartmouth	Complete/ Closed	
3.1	Continuation of Online Case Book for building designs for TB infection control	PIH	Complete/ Closed	
3.2	Continuation of Core Package Approach to Revitalizing TB Transmission Control	PIH	Complete/ Closed	
3.3	Airborne Transmission Control Training and Clearinghouse for Engineers	PIH	Complete/ Closed	
3.5	Testing of Guide for TB among HCWs	PIH/ PH/ URC	Complete/ Closed	
4.1	Training course in the management of MDR-	PIH	Complete/ Closed	

	TB/HIV co-infection			
4.2	TB CARE Clinical Fellowship for PMDT	PIH	Complete/ Closed	
4.3	DR-TB Learning Site	PIH	Complete/ Closed	
4.6	DRTB Suspect and Sputum-Tracking Tools	PIH	Complete/ Closed	
5.1	Identify best practices for early initiation of ART for TB patients	URC/ Jhpiego/ GTBI	Ongoing	
6.1	Health Insurance Toolkit	URC	Complete/ Closed	
Year 3	**Activity name**	**Lead partner**	**Status**	**Comments**
1.5	IPT delivery to Children and HIV Contacts	Dartmouth	Complete	Will continue as a Year 5 activity
3.6	Online Casebook Building Designs	MASS Design/ URC	Complete	Will continue as a Year 5 activity
3.7	AIC Course and Mentored Visits	PIH	Complete/ Closed	
3.8	Occupational Safety for HCW	URC	Complete/ Closed	
3.9	Tajikistan Infection Control Demonstration Site	PH	Ongoing	
3.10	Ndola Demo Site	PIH	Complete/ Closed	Joint Activity with TB CARE I
4.8	Scale-up Meeting	PIH/ URC	Complete/ Closed	
4.9	PMDT Fellowship	PIH	Complete/ Closed	
4.10	DR TB Learning Site	PIH	Complete/ Closed	
4.11	DR TB Pocket Guide	PIH	Complete/ Closed	
4.12	cPMDT District Planning Tool	URC	Complete/ Closed	
6.2	Ethical Patient Management	GTBI	Ongoing	
6.3	Insurance toolkit	URC	Ongoing	
Year 4	**Activity name**	**Lead**	**Status**	**Comments**

		partner		
1.6	Updated Interactive Online and Text Based (PDF) Refresher Course on TB for Physicians	GTBI	Ongoing	
3.11	Building Capacity for Infection Control	PIH	Complete	Will continue as a Year 5 activity
3.12	Standardized UVGI Fixture	PIH	Ongoing	
4.19	Translation of Management of MDR-TB in Children: A Field Guide	PIH	Ongoing	
4.20	Drug-resistant TB Training Network - Learning Site	PIH	Complete	Will continue as a Year 5 activity
4.21	Mobile Application: "The MDR-TB Pocket Guide"	PIH	Ongoing	
6.4	Framework of lessons on Psycho-social support for TB patients	PIH	Ongoing	Joint activity with TB CARE I

Additional details related to progress and status of activities include:

- CLA Impact Evaluation: In Year 3, in consultation with USAID, TB CARE II continued to provide support for CLA to conduct impact evaluations of USG funded TB activities, as determined by USAID. Per the request of USAID this continued in Year 4.
- Several TB CARE II activities led by PIH, including the PMDT Fellowship, AIC course and mentored visits, and the DR TB Learning site are designed to be multi-year projects, which have built steadily over the course of the project and incorporate new participants each year. As such, from a practical standpoint there has been a bit of roll over from one year to the next, and budgets have necessarily been revised and shifted based, for example, on the number of participants identified for different components and to reflect changes in schedules in an effort to be responsive to stakeholders.
- A number of activities have undergone modifications during the course of the year, as plans become more refined in consultation with stakeholders and based on changes in local or global needs. Modification requests have been reported to USAID on a quarterly basis or as needed and are summarized in the activity descriptions below.
- The Year 1 activity 4.2.1, Develop tools/strategies for increasing TB screening, prompt diagnosis, and access to treatment at HIV services, continued to use remaining funds to in Year 4 for additional printing and dissemination of the Focused Antenatal Care + (FANC +) job aid and FANC fundal height measurement tape measure as well as to follow up with the countries who have received the tools in order to monitor distribution, usage, and collect feedback.

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Year 3 Activities

1.5 Improving IPT Delivery to Children and HIV contacts

A. Progress Against Expected Outcomes

Strong progress was made on this activity this year. The planned activities were completed in quarter three, and a modification request was made to continue preparations for the follow on year 5 activity during quarter 4, in order to maintain momentum and secure study approvals.

B. Activities and Results

Activity 1: Implementing Best Practices of IPT Delivery to Child Contacts and HIV-infected Individuals

With assistance from Dartmouth and URC in-country personnel in Swaziland analyzed retrospective data on the two cohorts of interest, child contacts and HIV-infected individuals; Drs. Lisa Adams and Elizabeth Talbot from Dartmouth visited during the 2nd quarter and worked with MOH/SNAP and URC to review findings with the aim of contribute to the design of best practice models of IPT delivery. A concept note for testing several service delivery models was developed which will be coordinated with the NTP/SNAP countrywide agenda for IPT integration.

Towards improving understanding of IPT outcomes and ultimately delivery of IPT, a follow up field evaluation was conducted one month after baseline evaluation (March 2014). The National TB Control Program, Swaziland National AIDS Program (SNAP) and program leadership and clinical staff at the TB and ART clinics at the four sites were provided their site specific outcomes data, and also interviewed regarding approaches to improve IPT delivery in a patient-focused manner. Responses were organized into three major categories: service delivery, Information, Education and Communication (IEC) for patients and frontline healthcare workers, and community awareness. Several suggested approaches include:

- Deeper engagement of the community health network for community awareness and patient support
- Pairing IPT and ART management and refills
- Use of community-based peer support
- Shared medication retrievals

As uptake of IPT increases, methods to shift the simplest tasks of patient management and medication pick up will be needed to prevent further increases in patient visits at the already overburdened clinical facilities. Therefore, a study of IPT delivery models based on patient preferences to improve IPT outcomes was proposed, for Year 5 implementation.

Following the recommendation above, Dartmouth and URC initiated plans with the NTP in Swaziland to carry out a survey on preferences for approaches to IPT delivery. In order to maintain momentum between the two activity periods (the completion of the Year 3 activity and potential start of the Year 5 activity in October 2014), a request was made and approved by USAID on June 19th to allocate additional incremental funding to this activity to cover the period of July to September, encompassing primarily development of the IPT study protocol and submission to the Swazi and Dartmouth IRBs for approval. This phase will focus on ensuring

critical stakeholder input and support. An updated literature review will be performed to capture any guidance published since the team's 2012 systematic review was performed. During quarter 4, the updated protocol was submitted to the IRB in Swaziland and further work was done to complete preparations for the study.

The IPT systematic overview entitled "Interventions to improve delivery of isoniazid preventive therapy: an overview of systematic reviews" was submitted and accepted by BMC Infectious Disease journal. The article can be found here: http://www.biomedcentral.com/1471-2334/14/281.

C. Challenges

Nothing significant to report.

D. Next steps/ Implications for Year 5 Activities

The study phase of the activity will be completed as part of a Year 5 follow on activity. Necessary requests for approval at the national level have already been developed and plans are in place to allow activity to carry forward seamlessly from Year 4 to 5.

E. Dissemination of Lessons Learned

The results of the systematic review have been and continue to be disseminated among the TB community and stakeholders. The results of the Swaziland study will similarly be disseminated widely among stakeholders especially in Southern Africa.

Year 4 Activities

1.6 Updated Interactive Online and Text Based Refresher Course on TB for Physicians

A. Progress Against Expected Outcomes

1. *PDF TB Refresher Course for Physicians developed*: In progress - A draft has been developed and will be reviewed and field tested. Additional details are included below.
2. *Interactive online WMA TB Refresher Course for Physicians developed:* In progress – Content will be drawn from PDF: Programming for online course will begin after PDF content is finalized
3. *Number of websites the courses are available:* Not yet available
4. *Number of conferences the materials are disseminated:* Not yet available
5. *Number of users accessed the materials on the WMA website:* Not yet available

B. Activities and Results

Activities for this project are identified below

1. *Review and update original PDF:* The document was carefully reviewed for consistency with new WHO Guidelines, the 3rd Edition of the ISTC, and the new draft of the Post-2015 Global TB Strategy. A draft of the revised document was created that incorporated the above new content, with special attention paid to the diagnosis of TB including use of GeneXpert, and a focus on patient centered care rather than DOT. Coordinated with Education and Training Workgroup at the UNON to present an update on the course at the Discussion Session on November 1st and to sit at the Educational Materials table in the exhibit area in order to solicit pilot testers for the courses and conduct needs assessment on access to an preferences for online courses.
2. *External review of content, limited field testing:* A number of external reviewers and field testers have been identified. Pilot testing will occur in January 2015
3. *Revise interactive online course based on new content:* Scheduled for early 2015
4. *Conduct usability testing:* Scheduled for spring 2015
5. *Develop evaluation instrument*: Will occur after course content is finalized
6. *Post on server:* Will occur after course content is finalized

C. Challenges

While no significant challenges occurred, incorporation of GeneXpert into the diagnosis section required care and attention, since some countries are utilizing this technology and others are not. Additionally, different countries have different criteria and guidelines for when the test should be used. Since the course is designed to be applicable in many settings, care was needed to be general enough to be widely used, but specific enough to be of use, while still being clear and understandable. Further, the Post 2015 Global TB Strategy was in development and the final content was needed for incorporation into the revisions.

D. Next steps/ Implications for Year 5 Activities

This project will extend into Year 5, when the project will be completed. Implications of the project completion include availability of a new tool that can be widely utilized in multiple settings. The training courses should be widely marketed and disseminated, including to TB CARE II partners at the country level.

E. Dissemination of Lessons Learned

A poster on development of these revised materials can be submitted to the UNION World Conference in 2015.

INFECTION CONTROL

Year 3 Activities

3.6 Casebook for Health Facility Planning

A. Progress Against Expected Outcomes

In Year 4, MASS Design Group continued to document approaches to airborne infection control strategies within building designs in a variety of settings. A team from MASS Design Group carried out evaluations of TB treatment facilities in Ethiopia, and commenced the planning process for a series of case studies in Cambodia, Vietnam, and Thailand. These countries were selected due to their high TB prevalence rates.

Significant upgrades were also made to the Design to Heal web platform. The website interface was redesigned and programmed to ensure better, simpler functionally; the database management was improved to optimize content storage; and the visual branding of the site was strengthened to increase user appeal. Following these site upgrades, additional effort was invested in restructuring and adding visual and written content.

In addition to these activities, MASS partnered with collaborators from the Harvard School of Public Health and the CDC to redesign the Airborne Infection Control course formerly offered at the Harvard School of Public Health. The course will be offered again in the summer of 2015.

B. Activities and Results

MASS completed a range of activities in Year 4 in support of the Casebook project, which have been summarized as follows:

<u>Documentation + Content Development</u>

- Visited and assessed TB facilities in Ethiopia. At each chosen site, an in-depth facility evaluation was conducted, incorporating building performance assessments as well as interviews and discussions with healthcare administrators, facility managers, clinical staff, and operations/maintenance staff. A standardized questionnaire was used to gather information with respect to the facilities' usage, the specific contextual conditions of the site, and building performance issues such as circulation, ventilation, lighting, energy, and maintenance.
- Documented and subsequently added additional case studies to the Casebook website. These included written evaluations, lessons learned, photographs, as well as drawings of successful airborne infection control strategies.

<u>Data Collection</u>

- Refined facility evaluation questionnaire through several iterative workshops. Sought feedback on the questionnaire from designers and M&E specialist.
- Conducted research into an expanded range of impacts and relationships between the physical environment, airborne infection control, and health outcomes—in relation to this project as well as to other research initiatives being pursued in collaboration with partners including the Harvard School of Public Health and Georgia Tech.

Website Development

- Hired new web developer to upgrade site.
- Redesigned and programmed the website to optimize user functionality and navigation.
- Improved database management to optimize content storage.
- Strengthened the graphic interface and visual branding of the site to support increased user appeal.
- Restructured visual and written content to be more accessible and clear.

Outreach

- Presented the Casebook project at the Union Lung Conference on Lung Health in Barcelona, as part of a symposium on Innovations in Airborne Infection Control
- Presented the Casebook project to a range of constituents including the Ethiopian Ministry of Health and representatives from the Clinton Health Access Initiative (CHAI) and URC (University Research Co.)
- Participated in and advised projects undertaken by the Fogarty research group led by Ed Nardell, titled "Innovative Interdisciplinary Approaches to Sustainable Airborne Infection Control".
- Partnered with collaborators from the Harvard School of Public Health and the CDC to redesign the Airborne Infection Control course formerly offered at the Harvard School of Public Health. The course will be offered again in the summer of 2015.

C. Challenges

One of the main challenges has been identifying and coordinating health facility case studies. In spite of submitting clear TORs, some facility managers have had reservations allowing our team to conduct evaluations, for fear that their facility may not be ideal or present a poor impression of national health facilities. We have been very emphatic that the point of the case studies is to highlight innovative approaches (which can be found at every facility, no matter how modest); *not* to critique less-than-ideal scenarios. We suggest two approaches to resolving this challenge. First, we will need to work more heavily with our partners (e.g. URC, CDC) to help us reach out to in-country partners and make the right connections; personal introductions have been much more successful than cold-emailing. Secondly, we believe that showing the updated Design to Heal website and sample assessment reports to these contacts would help convince them of the utility of facilitating case studies, and garner better recognition that this could be an opportunity to showcase upgrades or work conducted that could subsequently be seen by a greater audience.

D. Next steps/ Implications for Year 5 Activities

Case study documentation

Inclusion of additional case studies in regional focus areas. Planning will be done to identify sites and coordinate travel to 3 high-burden TB regions (Southeast Asia, India/Bangladesh, and Brazil/Bolivia) in addition to additional case studies in Sub-Saharan Africa.

Website development

Continued upgrades to the Casebook website, and restructuring of existing visual and written content. Activities to include:

• Launch of updated website

• Continued website upgrades and addition of case studies
• Exploration of methods and logistics needed for remote submission of case studies by on-the-ground stakeholders

Data collection

Develop more robust processes and tools for documenting, collecting, and evaluating case study data by:

• Documenting an expanded range of impacts and relationships between the physical environment, airborne infection control, and health outcomes.
• Researching ways to improve our immersive engagement and data collection processes
• Developing further refined questionnaire and data collection forms for evaluating facilities, and exploring ways that this information could be collected and submitted by on-the-ground stakeholders.

E. Dissemination of Lessons Learned

In Year 5, MASS will continue to strategize methods for promoting the Casebook website as a resource for designers, health facility planners, administrators, and policy-makers. Efforts will include:

- Creating publicity for the site through global health professional networks (GHD online)
- Lectures, presentations, articles, or conferences
- Meetings with Ministries of Health, relevant NGOs, and architectural/engineering associations

3.9 Tajikistan Demo Site

With funds provided by the United States Agency for International Development (USAID), Project HOPE led by University Research Co., LLC (URC) in partnership with TB CARE II, Ministry of Health and Social Protection of Population of the Republic of Tajikistan (MOHSP), National TB Hospital (Machiton, Tajikistan) and National TB Program, are implementing this one-year project aimed at demonstration of TB burden from poor Infection Control (IC) and steps necessary to control it. This will be achieved through establishing Machiton TB Hospital as an IC demonstration and training base, documenting magnitude of TB burden caused by poor IC, establishing effective practices/investments for its control, and building national and regional interest to propagate these advances and provide the base for training to do so. Machiton TB Hospital has been selected for establishment of a demonstration and training base because of existing strong political commitment to make IC a priority in the country and improvements already made in the hospital.

A. PROGRESS AGAINST EXPECTED OUTCOMES

Project outcome targets are annual and will be evaluated and reported by the end of the project (EOP) (December 31, 2014). Below is presented progress against expected outcomes as of September 30, 2014.

1. **Outcome 1:Scale-up and Demonstration (Tool Development and implementation)**
   - 71% (12 out of 17) of pilot key facilities (TB Centers, Hospitals and PHC) have IC focal person appointed (EOP target 100%), IC Committee established (EOP target 88%) and IC implementation plan developed (EOP target 88%)
   - 53% of pilot key facilities (TB Centers, Hospitals and PHC) are monitoring IC plan implementation in place (EOP target 71%)

2. **Outcome 2:TB IC Monitoring & Measurement**
   - 80% (3,633 out of 4,547 HCWs) of HCW from pilot and additional key facilities (TB Centers, Hospitals and PHC) were screened for TB (EOP target 90%)
   - 63% of HCW TB suspects from those screened were tested for TB (EOP target 85%)
   - National R&R system including component for HCW TB status reporting is undergoing.

Major Achievements

- USAID TB CARE II IC training center project obtained an order from MOH that gives the IC center official status as the first National Infection Control training center.
- Successful completion of the ToT by international trainers was the first such training on a national level and has set up pool of national trainers to continue to educate health specialist in TB Infection Control. All cascade trainings are completed by the National trainers.
- TB IC risk assessments are conducted in 16 out of 17 pilot facilities by the trained specialist, recommendations are given for elimination of gaps and addressing training needs, plans for infection control are developed for all 17 pilot health facilities.

- Together with IC Thematic Work Group (TWG) members and other partners, existing country legal documents (orders, regulations and standards) on infection control are reviewed. All related documents were covered during the trainings and electronic copies (on CD) were distributed to training participants. TB IC Program Manager participated in adaptation of sanitation and epidemiological standards and regulations for TB facilities.
- On the bases of the National Training Center several training were conducted by other international partners: one 5-days training on GeneXpert was conducted by UNDP and Cepheid Training Center, and eight trainings by MSF.

B. ACTIVITIESANDRESULTS

1. Establish Machiton Hospital, Tajikistan as an IC demonstration and training base.

1.1. Getting necessary approvals from MOH and other relevant authorities:
Official status for the national IC training center is obtained. An order (№196 from 11.04.2014) was issued by Ministry of Health and Social Protection of Population of the Republic of Tajikistan on establishment of the National TB Infection Control and Demonstration Center with training and demonstration capabilities on the base of the National TB Hospital in Machiton. Additionally, an agreement was signed between Project HOPE and the National TB Hospital among other aspects also covering provision of training facilities by the hospital and regulating conduction of practical trainings on the bases of the existing departments (laboratory, MDR unit, diagnostic unit and etc.) of the hospital.

1.2. Final assessment of training center facilities, development of list of equipment needed:

An assessment visits were conducted by Project HOPE team to Machiton TB hospital to determine the number of rooms allocated for the training center and to evaluate facility condition, including equipment. Part of the building consisting of a large lecture hall and two classrooms (already supplied with tables, chairs and shelves), IT room and lobby were selected as a training facility and separated by plastic walls and door from the main facility. Project team, with assistance of the Project HOPE country team, and Project HOPE Senior TB Program Advisor conducted the final assessment of existing facilities and finalized list of equipment/supplies required for training center.

1.3. Procurement of necessary training and other equipment.

The IC training center was equipped by the Project with white boards, air conditioners, projector, screen for projector, two desktop computers, printer, as well as IC equipment, such as GeneXpert machine and 500 cartridges. Additionally, as a cost share with GFATM RCC 2 TB grant telecommunication equipment was also procured and provided to be used for conduction of webinars. Currently, the training center is fully equipped to operate.

1.4. Program launch event organized and highlighted in mass-media.

Official launch of the Project has been arranged with the participation of high level authorities. The USAID TB CARE II Project, in partnership with the Ministry of Health and Social Protection, National TB Hospital and the National TB Program launched a project in April 2014. Deputy Chief of Mission Robert Burgess and Deputy Ministry of Health Navruz Jafarov, Director of NTP, UNDP, KfW and other local and international NGOs participated in the official opening ceremony of the USAID Tuberculosis Infection Control Training Center in the National TB Hospital at Machiton.

This even was highlighted in country mass media (articles were published on “Ozodagon” and "Asia-Plus" websites as well as featured on TV channel "Jahonnamo") and a news story was posted on the STOP-TB website (http://www.stoptb.org/news/frompartners/2014/fp14_028.asp).

1.5. Study tour to Vladimir IC CoE for program manager and national team leader.
Per suggestion of the Director of the IC Center of Excellence in Vladimir, Russia the visit is shifted to November, 2014.

1.6. Establishment of links with Vladimir IC Center of Excellence and other relevant institutions.
National trainers participated at the three webinars on TB IC issues organized by Dr. Volchenkov and CDC experts involved in trainings. Study tour of Director of TB IC Training Center to Vladimir IC COE will allow further strengthening the established links and build opportunity for information and experience exchange and learning.

1.7. Negotiations with relevant authorities for accreditation of training course.

All documents for accreditation of the training course are prepared and submitted for MOH approval on June 11, 2014 (letter #52). Regular follow up communications were done. However, MOH is delaying with the approval. We currently explore opportunity of hiring a MOH consultant to review the application documents and assist with passing the accreditation.

2. To Prepare National trainers on TB IC with involvement of external TA (Paul Jenson and Grigory Volchenkov).
The ToT on "Tuberculosis Infection Prevention and Control" was conducted successfully and 7 from 14 participants were assigned as National trainers. They are working under supervision of G. Volchenkov (Director of IC CoE in Vladimir oblast). Professor P.A. Jensen (CDC), Vlad

Furman (Regional TB IC Specialist of USAID/TB CARE I project), M. Shoismatulloev (TB IC focal Point of NTP) are also providing mentoring on case by case bases.

2.1. Review of existing country IC guidelines and other relevant documents.

Existing country IC materials reviewed and gaps identified. Together with IC Thematic Work Group (TWG) members and other partners. Existing country legal documents (orders, regulations, and standards) on infection control are reviewed. Sanitation and epidemiological standards and regulations for TB facilities were developed/adapted and approved. TB IC

Program Manager participated in work of the TWG. All related documents were covered during the trainings and electronic copies (on CD) were distributed to training participants.

2.2. TA visit of international experts for preparation of ToT.

According to the plan at the beginning of the project the visit of the Centers for Disease Control and Prevention (CDC) experts on IC Paul A. Jensen and Garry Blackwelder was organized. The experts conducted risk assessment of TB transmission in several TB and PHC facilities (Children TB hospital, Machiton hospitals, Public Health Laboratory, City TB Center, PHC#10, PHC#1, and National TB Center).

2.3. Development of ToT package and selections of trainees.

By recommendation of NTP number of trainees was increase from initially planned 10 to 14. NTP selected and provided list of trainees. All necessary approvals were received from the MOHSP (order #200 from 12.04.2014).

Training materials have been developed to introduce adult learning methodology and covered all main topics related to infection control. Professor Paul A. Jensen, as a leading trainer and Dr. Volchenkov were involved in ToT package preparation. Project HOPE ACSM Regional Specialist designed the materials related to adult learning tools and techniques. Following the two days of ToT conducted by Project HOPE Regional ACSM Specialist, CDC expert Paul A. Jensen and Vladimir IC Center Director, Dr. Volchenkov led the five day training on Infection Control.

2.3. ToT for national team of trainers with involvement of external TA.

A 5-day Training of Trainers (ToT) on "Tuberculosis Infection Prevention and Control" was conducted by CDC expert Paul A. Jensen and Vladimir IC Center Director, Dr. Volchenkov. 14 national experts were trained to continue to educate health care workers in TB Infection Control. Additional 5 trainees (1 from Project HOPE, 1 from USAID, three from MSF) were invited to participate in the training.

The training was focused on TB infection prevention and control hierarchy, as well as on planning, prioritization, advocacy, implementation and evaluation of WHO recommended airborne precautions for TB transmission risk reduction. Implementation of such priority based,

feasible and effective approaches aimed to help National TB control program to prevent transmission of TB, especially of its drug resistant forms, to further reduce TB incidence.

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During lectures and practical sessions low cost and effective interventions have been discussed in detail, such as triage, cohorting, separation and isolation of highly contagious patients in in-patient and household settings, importance of rapid diagnostics and early effective TB treatment, risk assessment, zoning of a facility according to TB transmission risk level and other applicable administrative measures. Special sessions have been dedicated to environmental controls, including natural and mechanical ventilation, ultraviolet germicidal irradiation (UVGI).

Pre- and post- training tests clearly showed that after the training participants are able to perform TB transmission risk assessment, to develop priority and available resources based plan, can perform assessment of ventilation parameters, measure UVGI and assess effectiveness and safety of UVGI installation, conduct respirator fit test, build and evaluate laboratory biosafety program in TB laboratory.

From 14 participants seven have been identified as national trainers for further collaboration. They had conducted cascade trainings on TB IC at National IC training center for TB specialists, PHC doctors, nurses and laboratory specialists.

2.4. National trainers work and learn with mentoring/coaching of program IC consultant.

Under supervision of G.V. Volchenkov and on case by case bases also professor P. Jensen and Vlad Furman (Regional TB IC Specialist of TB CARE I), M. Shoismatulloev (TB IC focal Point of NTP) risk assessment for TB transmission in all pilot health facilities of Sugd, Kurgan Tube, Kulyab, GBAO and Dushanbe were conducted. Reports on risk assessment results were shared with NTP and partners. The main findings from the assessments were included into the training materials.

3. Provide five cascade trainings for TB Specialists, PHC workers, Epidemiologists and other public health specialists.

All (five) cascade trainings are conducted and 61 participants from TB service and PHC facilities of Sugd, Kurgan Tube, Kulyab, GBAO and Dushanbe are trained during the three days trainings. MOH order was obtained for all cascade trainings.

3.1. Selection of participants of cascade trainings.

Pilot rayons and facilities were selected on the basis of statistical data from NTP, as well as data from the National Center of Medical Statistics. The data included: number of TB cases among health care workers (HCW) at district level; the incidence of tuberculosis among all population, including MDR TB; prevalence of tuberculosis at district level; and, the number of TB cases among HCW at the facilities. Three facilities from each Oblast with highest rates of TB cases among HCW were selected as pilots. The facilities included: Oblast TB Hospital, TB Center, and Rayon Primary Health Care (PHC) facility. In total 17 facilities were selected and included as project pilot sites. Representatives from the selected facilities responsible for infection control have been selected to undergo the TB IC training. This included the deputy head of facility, chief medical nurse, TB IC focal person from TB Center and laboratory specialist.

3.3. Development of training materials for cascade trainings.

The package of training materials for cascade trainings was developed by two national trainers with technical assistance of Dr. G. Volchenkov. Training materials on TB IC currently available in the country were reviewed by the National team of trainers, and the training module including presentation for cascade training was prepared. The results of the risk assessments were included into the training materials and successfully used for preparation of TB IC plans. The training materials underwent additional revision/adaptation after the first cascade training, as it was identified that participants are having difficulties to comprehend the materials. Therefore, before the remaining planned cascade trainings were rolled out, jointly with USAID\TB CARE I project the materials were revised/adapted and after finalization were translated into Tajik.

3.4. Training for PHC facilities including labs, Epidemiologists, PHC workers.

All planned five cascade trainings were conducted by National trainers. In total 61 representatives of TB, PHC and SES from Sugd, Kurgan Tube, Kulyab, GBAO and Dushanbe were trained in 3-day trainings. All teams included the deputy head of facility, chief medical nurse, TB IC focal person and laboratory specialist from TB Centers and PHC, Epidemiologists of SES.

Trainings were focused on TB infection prevention and control hierarchy, as well as on planning, prioritization, advocacy, implementation and evaluation of WHO-recommended airborne precautions for TB transmission risk reduction. All participants were familiarized with results of risk assessment in pilot facilities. During the trainings IC plans for each pilot facility were developed by participants with assistance of trainers. The result of the post-training test (average score of correct answers on pre-test was 34% vs.89% on post-test) showed a significant improvement of the participants' knowledge on TB IC issues.

4. Discussions with donors/partners to identify sources for additional funding.

Project HOPE has started internal discussion on identifying corporate donors for additional funding. A concept note was developed and submitted for private donor consideration. Project HOPE received an award from the USAID for the implementation of the five-year USAID CAR TB Regional Program in Tajikistan and Uzbekistan. The capacity of the training center built by the TBCARE II will be widely utilized by the new USAID TB program.

5. Telemedicine (webinars).

During the reporting period national trainers participated in 3 webinars conducted by Dr. Volchenkov and CDC. Two consilia (telemedicine) sessions with the Oblast level TB hospitals were conducted with the use of telecommunication.

6. IC assessment visits to the pilot facilities.

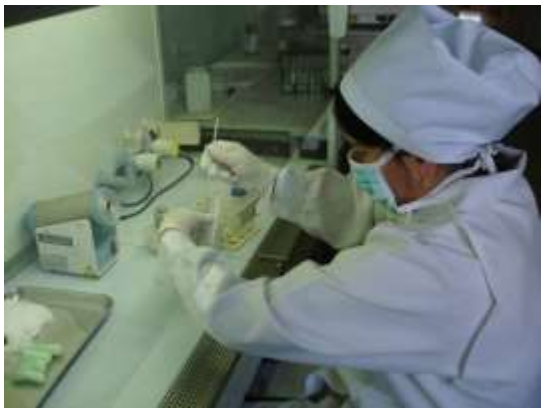
TB transmission risk assessment of 16 pilot TB and PHC health facilities was conducted by the trained specialists in Kulyab, Sughd, GBAO and Dushanbe regions on the basis of a checklist developed by Project HOPE with involvement of Dr. Volchenkov. Based on the assessment results the report with recommendations was developed and shared with NTP and partners. The main findings from the assessment were included into the training materials.

One of the national trainers participated in the risk assessment and monitoring of IC plan implementation at the TB center and PHC facilities of Balsjuvan district conducted by the USAID/TB CARE I project staff (V. Furman and Z. Abdulloeva). Dr. Shoismatulloev, National

TB IC trainer and Deputy Director of National TB Center on TB IC, also participated in some assessments.

7. HCW from pilot key facilities (TB Centers, Hospitals and PHC) screened for TB. During the assessment visits questionnaires for screening of TB symptoms among HCWs were distributed to the assigned persons at the Oblast, district and village levels to conduct interviews for identification of TB suspects among HCWs. Sputum collection from the suspects was organized in a way that transportation to the Machiton IC training center, National TB Centers is done by the training participants coming for trainings from those facilities.

2,566 out of 3,434 of the HCWs from pilot health facilities were screened for TB symptoms by filling out questionnaires. In addition to that, 1,067 out of 1,113 HCWs from other health facilities were screened (in total 79.9% (3,633 out of 4,547 HCWs)). 62.9% (80 out of 127) of those identified as people with presumptive TB were tested with the use of GeneXpert and smear microscopy. Three HCWs (1 male nurse, 1 housekeeping employee from a TB prevention service, and 1 female nurse from a general hospital) were diagnosed with tuberculosis.



8. Regular partners meetings

The first partners meeting was conducted in April 2014 during the CDC experts and Project HOPE representatives (Regional director and Sr. Program Officer) visit in Tajikistan. P. Jensen and G. Blackwelder as well as Mariam Sianozova, Project HOPE Regional Director and Alex Trusov, Project HOPE Senior TB Program Advisor had meetings with the Deputy Minister of Health and Head of State Sanitary and Epidemiology Surveillance Service, international and national partners aimed at strengthening coordination of TB IC activities in Tajikistan.

Another partners meeting with the aim of strengthening coordination of TB IC activities in Khatlon region were conducted with the Head Governmental Sanitarian Doctor of Republic of Tajikistan and international and national partners in September, 2014. During the meeting problems related with TB registration among HCWs, results of risk assessments in Khatlon region, including design and construction of TB institutions, were presented and discussed.

C. CHALLENGES

1. TB screening/testing and reporting among HCWs was a major challenge. Health facility employees prefer to conceal their diagnosis, since established TB diagnosis means loss of employment and salary without giving them any benefits for treatment or social support. That's why they prefer to be tested and treated anonymously. Coupled with the poor recording and reporting mechanism in the system for registration of TB cases among HCWs this creates issues in having reliable and valid data on TB among HCWs.
2. Although TB IC National Guidelines was introduced by the MoH order in 2011, many epidemiologists are not familiar with its requirements and don't use it in their work. This is partly due to a high employee turnover and insufficient training of the current staff. TB IC trainings/refresh trainings are required to address this issue and special forms need to be developed to regulate actions of epidemiologists.
3. The country is experiencing a severe shortage of engineers serving TB IC technical equipment, including biosafety boxes, which contributes in poor IC in the facilities even if they have knowledge and theoretical capacity to implement proper IC measures.
4. The accreditation of the training course by MOH is an issue. Although, all documents are prepared and submitted for MOH approval on June 11, 2014 and regular follow up communications were done, MOH is delaying with the approval. We explorer opportunity of hiring a MOH consultant to review the documents and assist with passing the accreditation.

D. NEXT STEPS/ IMPLICATIONS FOR YEAR 5 ACTIVITIES

1. Get accreditation for training course at the national level to make sure that certificate of training will be counted as post-graduate education course in infection control. We explore opportunity of hiring a MOH consultant to review the documents and assist with passing the accreditation.
2. Continue screening of HCWs for TB and TB testing of those who have been identified as TB suspects.
3. Continue monitoring of the introduction of TB IC measures at the selected health facilities
4. Organize study tour to IC CoE in Vladimir oblast, Russia for program manager and national team leader
5. Project will explore options for development of IC website resource.
6. Project also explores options to conduct regional IC training for TB IC specialists from CAR countries**.**

E. Dissemination of Lessons Learned

Project holds regular (quarterly) meetings with national health authorities and international partners were project activities, challenges and achievements are shared and discussed. Also, project reports are submitted to NTP and MOH for their information and consideration.

Year 4 Activities

3.11 Building Capacity for Infection Control

A. Progress Against Expected Outcomes

Expected outcome 1: Professionals trained and mentored on environmental controls.

Progress: There were two Mentored Field Visits (MFV) in Year 4 conducted by TB CARE I infection control experts. The two visits were conducted in Nigeria in Q2 and Kyrgyzstan in Q3. A third MFV planned for Uzbekistan in Q4 did not take place due to security issues and restrictions placed on foreigners; the mentor was able to complete his mission but the mentee could not accompany him.

Expected outcome 2: IC design and engineering controls capacity building through HSPH summer course.

Progress: The *Building Design and Engineering Controls for Airborne Infection Control* (AIC) Course did not take place in Year 4. The course needed to find a new hosting organization as its goals were no longer fitting into the strategic objectives of the Department of Executive and Continuing Education at the Harvard School of Public Health and the cost was prohibitive to the target group. In Year 5 the course will be organized by the MASS Design Group in collaboration with other Harvard entities; CDC will continue to be a sponsor.

Expected outcome 3: TB Design Roster on GHDonline.org (IC consultant clearinghouse)

Progress: The TB Design Roster was launched in August 2013 on GHDonline.org and is hosted within the Infection Control Community. The moderators are Edward Nardell, Grigory Volchenkov, and Paul Jensen.

B. Activities and Results

Activity 1: Train regional/local experts and mentor experts

Results: This activity was partially addressed by the MFV conducted by TB CARE I in Nigeria and Kyrgyzstan but fell short of the anticipated number of trainees due to the difficulty in identifying and organizing the MFVs. The postponement of the AIC course from 2014 to 2015 also resulted in fewer infection control consultants trained than anticipated.

Activity 2: Develop clearinghouse, structure, listing criteria, and collect feedback and monitor usage

Results: The infection control consultant clearinghouse was launched in August 2013 as the TB Design Roster to link TB IC consultants with projects that need their expertise. There are currently 42 consultant profiles with 18 viewable to members of GHDonline.org indicating these consultants are available and willing to be contacted. There were 2206 page views of the TB Design Roster in Year 4.

C. Challenges

As reported by TB CARE I, identifying and organizing MFV opportunities proved to be challenging and only two visits were successfully conducted.

It was also disappointing that the AIC course did not take place in 2014. It had previously been offered every August for six years in a row. The mini AIC courses in South Africa and India that were developed from the Harvard AIC course did take place but they are only open to local participants.

The TB Design Roster was launched more than one year ago but uptake by consultants has been slow. It is also not possible to know through routine metrics if any consultants have been hired through this clearinghouse.

D. Next steps/ Implications for Year 5 Activities

The AIC Course is expected to take place in August 2015 and there is likely to be high demand for participation; usually there are 40-50 participants each year. The MASS Design Group will organize the course in collaboration with CDC, the HSPH Department of Environmental Health and possibly also the Harvard Graduate School of Design. Donor support, such as that offered by USAID through TB CARE, enables participants from resource-limited settings to attend. Support for 10 participants through TB CARE II has been requested.

There will be greater marketing of the TB Design Roster in Year 5 in an attempt to reach more TB IC consultants and to make sure that the TB community is aware of this resource.

E. Dissemination of Lessons Learned

As the training/mentoring activities largely did not take place in Year 4, it is mainly the TB Design Roster that has been disseminated through the GHDonline.org platform which targets both the infection control and TB communities, where there is much overlap. The TB Design Roster was featured in several DR-TB Training Network newsletters and was promoted by GHDonline.org in emails sent directly to its members.

3.12 Standardized UVGI Fixture

A. Progress Against Expected Outcomes

Expected outcome: Published standard, high-quality, UVGI unit design(s) and Standard International UVGI Guidelines for use and maintenance.

Progress: There has been progress towards this outcome but the goals have changed slightly. The overall goal of this project is to accelerate the implementation of upper room UVGI globally by addressing the following barriers:

1. A lack of usable evidence-based applications guidelines.
2. A lack of performance criteria for upper room UVGI fixtures, specifically data on total UV output per fixture and full gonioradiometry output.
3. A lack of manufacturers of quality fixtures in key application areas such as India.
4. Plans for achieving maintenance of fixtures in the field.

B. Activities and Results

Activity 1: Testing of prototype unit(s) and technology transfer

Results: Professor Wilhelm Leuschner at the University of Pretoria in South Africa has now measured the output of UVGI fixtures produced by several U.S., South African, and European manufacturers. A Dutch manufacturer has contacted Phillips Lighting, which has expressed interest in developing another laboratory for UVGI fixture testing.
Egg crate UVGI has been published and presented at several meetings. Architects are planning its installation because it has the potential for an increase of approximately 7-fold in efficiency over traditional louvered fixtures.
Research on LED UV continues with the major barriers being cost and power, but these are likely to improve with time.

The Harvard Fogarty engineer that has been working with Edward Nardell will move to South Africa in January to work with colleagues there to establish UV testing facilities.
At the New Delhi meeting the idea of a leasing arrangement for UVGI fixtures was discussed where a company, possibly a company already supplying equipment to hospitals (such as biological safety cabinets) would plan, install, maintain, and replace fixtures all for one monthly or annual leasing fee. It was felt that this would solve the problem of planning and maintenance expertise in hospitals.

Activity 2: Drafting of UVGI guidelines including technical plans

Results: High-level working group meetings in July and September, 2014, in Pretoria, South Africa, and New Delhi, India, respectively, were held in an effort to achieve consensus on how to move forward. Generally, the objections to UVGI as unproven and unsafe have vanished. South Africa has produced a draft national guideline that is under review externally. The guideline is based on the as-yet-unpublished guidelines from the AIR facility studies in South Africa. India is not nearly as far along but will benefit from progress in South Africa.

A UVGI article with application guidelines is nearly ready for publication. At the October 2014 IUATLD Conference, plans for a Stop TB Sub-Working group to draft UVGI guidelines as a project to be published through WHO were discussed.
There are many collaborators and funders involved in this work.

C. Challenges

There are a number of challenges with the implementation of UVGI globally – please refer to Section A above.

D. Next steps/ Implications for Year 5 Activities

The immediate plans are to get the UVGI paper published.

E. Dissemination of Lessons Learned

The development of the guidelines are still in process. Information about UVGI has been shared at two workshops held in South Africa and India and will reach a wider audience with the publication of the UVGI paper.

PMDT

Year 3 Activities

4.11 DR-TB Pocket Guide

A. Progress Against Expected Outcomes

Expected outcome: Pocket guide for the Medical Management of MDR-TB - English

Progress: The MDR-TB pocket guide has been completed. *The PIH Guide to the Medical Management of Multidrug-Resistant Tuberculosis, 2nd Edition*, was published in English early in 2014. It is available in three formats: print, PDF, and online e-Book.
The pocket guide has also been translated into Russian by TB CARE I and is available as of October 2014.

B. Activities and Results

Activity: Updated MDR-TB pocket guide

Results: The 1st Edition of the guide was updated with input from TB CARE I and II collaborators and based on WHO recommendations whenever possible. It is available electronically on the DR-TB Training Network website:

- PDF: https://drtbnetwork.org/PIH-MDR-TB-Pocket-Guide
- Fully searchable online e-Book: https://drtbnetwork.org/pih-guide-medical-management-multidrug-resistant-tuberculosis

The forms have also been made available in editable versions for customization by MDR-TB programs.

The Russian version can be downloaded from:
http://www.tbcare1.org/publications/toolbox/tools/pmdt/download.php?file=Guide_to_Medical_Management_of_MDR-TB_Russian.pdf

Of the 3000 copies of the English version printed in 2014, approximately 1300 have already been distributed to more than 20 countries and were made available at the IUATLD Conference in Barcelona.

C. Challenges

The main challenge experienced was the additional time required to finalize the guide. Despite this delay, it was not possible to include more guidance on bedaquiline and delamanid as it was not available at the time of publication.

D. Next steps/ Implications for Year 5 Activities

In Year 5, a mobile application that complements the guide will be available as a free download. This bedside resource will put the most important information at the clinician's fingertips for easy reference.

E. Dissemination of Lessons Learned

The guide has been made available in various formats through TB CARE I, II and implementing partner websites. The print copies have been shipped upon request and distributed at the IUATLD Barcelona Conference in October 2014.

The English and Russian versions of the guide will also be shared at the *Stemming the Tide of DR-TB* Conference, Best Practices from GFATM Grants in Eastern Europe and Central Asia, to be held at the Harvard Center for Global Health Delivery in Dubai December 4-6, 2014. There will be representatives from 14 countries and partners such as IRD, MSF, WHO, Stop TB, USAID and Global Fund.

Year 4 Activities

4.19 Translation of Management of MDR-TB in Children: A Field Guide

A. Progress Against Expected Outcomes

Expected outcome: Translation of *Management of MDR-TB in Children: A Field Guide*

Progress: The *Management of MDR-TB in Children: A Field Guide* has been updated by the Sentinel Project on Pediatric Drug-Resistant TB with new dosage tables and treatment information. This 2nd Edition of the pediatric guide has been translated into Spanish and Russian and both versions are currently being reviewed by content experts.

B. Activities and Results

Activity 1: Translation, editing, printing, and dissemination of the guide in Spanish and Russian.

Results: The guide has been translated into Spanish and Russian. Content experts are reviewing the accuracy of the translation and editing for clarity, as needed.

Activity 2: Webinar conducted to promote/disseminate the guide.

Results: The Sentinel Project on Pediatric Drug-Resistant TB organized six webinars in Year 4 based on the contents of the guide. There were a total of 271 participation events representing 198 unique individuals from 51 countries. More details are available in the Appendix.

C. Challenges

The greatest challenge to-date is ensuring the accuracy and clarity of the translated content. The proofreading step of the process has taken longer than anticipated.

D. Next steps/ Implications for Year 5 Activities

In Year 5 the translated guides will be finalized and printed.

E. Dissemination of Lessons Learned

When completed, the guides will be disseminated via the DR-TB Training Network website, the Sentinel Project website, and via TB CARE I and II partners. The guides will be available in multiple formats including print, PDF, and as online e-Books.

4.20 Drug-resistant TB Training Network - Learning Site

A. Progress Against Expected Outcomes

Expected outcome: DR-TB Training.

Progress: The DR-TB Training Network is the platform for a variety of online training opportunities and also provides access to a number of publications developed by the TB CARE II project and partners. In Year 4 the website hosted live webinars, self-study activities, a clinical case discussion, and publications focused on the management of DR-TB.

B. Activities and Results

Activity 1: Continuation of the clinical case discussion started in Y1.

Results: The case discussion series hosted by the DR-TB Training Network has concluded with 34 cases covering a variety of clinical and psychosocial topics relevant to the treatment of DR-TB, with additional guidance provided by a bevy of experts from TB CARE I and II partner organizations.

Activity 2: Continuation of the online learning activities including webinars and self-study tools.

Results: The DR-TB Training Network hosted 15 webinars in Year 4 and there are now 6 self-study activities. The webinars included 6 on pediatric DR-TB topics in English, 3 on TB IC topics in English, 5 on TB IC topics in Russian, and 1 in French on the basics of MDR-TB management. More webinar data can be found in the Appendix, below are the highlights:

Webinars	No.	Participation Events	Unique Individuals	No. of Countries Represented	YouTube™ views after live event (as of 11/7/14)
Pediatric DR-TB (English)	6	271	198	52	860
TB IC (English)	3	39	28	18	178
TB IC (Russian)	5	147	76	8	292
MDR-TB Basics (French)	1	15	15	8	28
TOTAL	**15**	**472**			**1347**

The six self-study activities have been viewed 441 times in total with the *Five A's of Patient Adherence to MDR-TB Treatment* the most popular with 227 views alone.

C. Challenges

The main challenge for a resource such as the DR-TB Training Network is that its target group, TB practitioners in resource-limited, high-burden TB settings, may not have access to the internet or if they do, it is often a low-bandwidth connection or cost-prohibitive for participation in live webinars. The online learning activities such as the live webinars and self-study activities require constant access to the internet to participate, which is a limitation. Other tools such as the case studies and publications are available to download for offline use. To increase access to the contents of the webinars, the presentations are available to download and videos have been shared offline via external hard drives, when possible.

The resources of the website are also mainly offered in English, which limits access; efforts are underway to translate more of the content.

D. Next steps/ Implications for Year 5 Activities

In Year 5, the DR-TB Training Network will work to make the existing resources as accessible as possible by completing the translation of the case studies and select publications into Russian, French, and Spanish.

The live webinars will continue and it is anticipated that the new TB drugs will feature in the topics presented. Additional self-study activities will be developed.

E. Dissemination of Lessons Learned

The activities and resources developed are promoted and available via the DR-TB Training Network website and newsletter, the TB CARE I and II websites, and partner networks. The webinars are archived on YouTube™ and can be viewed at any time where access is available. The website also provides a platform where the public can contact us to request print copies of the publications and ask questions in the clinical case discussion series.

The FIND TB Resources Newsletter has twice highlighted resources developed by the TB CARE II project which drives additional traffic to the DR-TB Training Network website. Most recently, the July 2014 newsletter highlighted the *Five A's of Patient Adherence to MDR-TB Treatment*.

4.21 Mobile Application: "The MDR-TB Pocket Guide"

A. Progress Against Expected Outcomes

Expected outcome: Android and/or iPhone compatible mobile application based on the MDR-TB pocket guide published in Year 4.

Progress: A framework has been developed for the mobile application and currently the programmer is building the functionality and adding data. The application has been started on an Android platform and the possibility of creating an iPhone version using a cross-platform program, Adobe PhoneGap, will be evaluated.

B. Activities and Results

Activity 1: Mobile app developed.

Results: The mobile app development is in progress. The app will not be a copy of the guide but will instead include tables and other information from the guide that would be useful for quick reference. Additional functionality to improve its utility as a bedside/diagnostic reference tool is being explored, such as adding a Snellen chart, the Ishihara Test, and a brief peripheral neuropathy screening tool.

Activity 2: Mobile app disseminated.

Results: None to-date as the mobile application is still in development.

C. Challenges

The application is still in the early stages of development so we have not experienced significant challenges reaching this stage but the project will take more time than initially expected.

D. Next steps/ Implications for Year 5 Activities

The application will be completed in Year 5, ideally in two mobile platforms: Android and iPhone. After the initial release, additional programming may be necessary if software bugs are revealed or to make improvements based on user feedback.

E. Dissemination of Lessons Learned

The application will be made available as a free download via online stores such as the Apple Store and Google Play. It will be promoted via the DR-TB Training Network website and newsletter and also via partner networks.

TB/HIV

Year 2

5.1 Identify best practices for early initiation of ART for TB patients

A. Progress Against Expected Outcomes

Work on this activity was undertaken by TB CARE II team including URC, GTBI, and Jhpiego with significant contributions from TB CARE I (the Union) specifically related to identifying best practices developed in Zimbabwe.

B. Activities and Results

The bulk of the work under this activity was completed in Year 3. In Year 4, work focused on drafting and reviewing the framework for best practices to improve early initiation on ART for TB patients. This is still underway.

C. Challenges

No significant challenges were experienced.

D. Next steps/ Implications for Year 5 Activities

N/A

E. Dissemination of Lessons Learned

No dissemination has taken place so far; following completion of the best practice framework, the TB CARE II will aim to disseminate the findings widely.

HEALTH SYSTEM STRENGTHENING

Year 1

7.2.2 Create tools to enable annual strategic planning review/evaluation and build capacity of NTP to carry out these activities

A. Progress Against Expected Outcomes

The pilot testing of the ethics tool was completed in Namibia and Mozambique along with partners from Project Hope, Inc.

B. Activities and Results

The pilot testing of the ethics tool was completed in Namibia and Mozambique along with partners from Project Hope, Inc. This included a number of stakeholders from the Ministry of Health levels as well as district and provider levels. Both programmes provided positive feedback on the tool. However, suggested changes included clearer instructions on target audience use, as well as the ability to streamline the tool for more brief use. It was reported that persons who participated in the testing process, were able to identify gaps in their programmes to be addressed.

C. Challenges

Because of the sensitive nature of ethical practices, delays occurred due to obtaining required approvals for pilot testing. Additionally, the nature of pilot testing took valuable time of practitioners in the field, so finding optimal time for meeting with them was an issue. However, appropriate buy-in and stakeholder participation made the pilot testing more valid and well worth the wait.

D. Next steps/ Implications for Year 5 Activities

The final phase of modifying the ethics tool and creating better guidance along with it has started. This will result in a finalized tool which can be disseminated for other country use.

E. Dissemination of Lessons Learned

The pilot testing country reports from Namibia and Mozambique can be used to develop future projects with the lessons learned from in-country approvals and stakeholder buy-in. These lessons will also be incorporated in the final disseminated tool.

Year 3

6.2 Ethical TB Patient Management Training

A. Progress Against Expected Outcomes

A draft of a training curriculum of ethics has been started along with a pilot testing plan.

B. Activities and Results

The process of developing a training on ethical management in TB has begun. A preliminary outline of the training has been started. It will be presented at the Union World Conference on Lung Health for feedback within the context on the findings from the ethics assessment tool. There has also been a pilot testing plan for the training developed. A testing venue of South Africa is being explored along with collaboration from URC.

C. Challenges

Because of the sensitive nature of ethical practices, delays occurred due to obtaining required approvals for pilot testing of the ethics tool on which the training curriculum will be based. This subsequently delayed the start of the training curriculum development.

D. Next steps/ Implications for Year 5 Activities

Once feedback has been obtained for the training curriculum draft, it will provide better guidance on pilot testing, and eventually, implementation in the field.

E. Dissemination of Lessons Learned

Feedback from the review of the draft curriculum (later this calendar year) will be used to refine the pilot testing plan in 2015.

6.3 Strengthening coverage for TB through Universal Health Care

A. Progress Against Expected Outcomes

Improved integration of TB services within NHI programs: Elements of this activity overlap and build on the Year 2 Activity 6.1. As discussed in that section, approaches to engaging country stakeholders around the role of TB services and TB programs in UHC reforms and the development of insurance based systems continue to evolve as plans for reform develop, for example around the new Stop TB strategy and the post-MDG agenda. This work will continue into Year 4.

B. Activities and Results

Activity 1. Workshop on strategies to improve successful delivery of TB services within insurance programs: TB CARE II organized and led a workshop entitled **Exploring the promise of improving access and delivery of TB services through insurance-based financing reforms**

in September 2014. The focus of the workshop was to provide a forum for information sharing and review of current systems for ensuring access to, and provision of, essential TB services and core public health functions in the context of UHC financing reforms in Asian countries. With collaboration from WHO offices in Geneva, WPRO, and SEARO, participants from ten countries convened to discuss issues related to design and delivery of TB services in the context of health insurance-based reforms and universal health coverage targets. The objectives of the workshop were to: 1. Increase awareness and share information around access and delivery of TB services under different models of social health insurance systems; 2. Review the experience of health financing systems and TB services (both clinical and public health services) in the Asia Pacific Regions; provide platform for information sharing between countries with high burden of TB; 3. Discuss and develop common principles, best practices, and policy options around essential public health functions and core services for TB control and care in insurance-based systems; 4. Discuss critical gaps in coverage and services for TB under existing models; and 5. Identify factors which can lead to improvements in TB outcomes via insurance-based service delivery systems.

Activity 2. Manual on TB service integration within NHI programs adapted in two countries: Based on the outcome of the workshop, the format, content and purpose of the manual which had earlier been planned and drafted has been revised. The workshop highlighted the need for the development of platform for further, ongoing information exchange, as well as assistance to be given to countries to frame goals for improvements in existing programs and provide guidance for future insurance-based reforms. This should ideally further contribute to the WHO work on developing operational guidance for the new global TB strategy. In follow up, TB CARE II will work on drafting a follow up discussion paper or policy brief in collaboration with WHO and specifically targeting the WP region outlining the critical considerations and framework for approaching introduction of an insurance-based reforms, building on regional experiences and lessons. In addition or as supplement, assisting to provide analyses to feed into a broad (global) document discussing the development of health insurance in the post-2015 Global TB Strategy. Also, the project will explore the potential to conduct a similar workshop targeting the Africa region and engaging NTPs and other policy makers in several high burden TB countries involved to designing and starting-up UHC based financing reforms

C. Challenges

The organization and set up of the workshop in Bangkok had a series of associated organizational challenges, but nothing of significance. Not all intended participants were ultimately available for a variety of reasons, but the workshop was overall successful.

D. Next steps/ Implications for Year 5 Activities

N/A. The activity was not yet complete at the end of Year 4 and will continue with remaining funds in Year 5.

E. Dissemination of Lessons Learned

Dissemination of lessons and findings is a critical component of this activity. The project is seeking every opportunity to engage more and more diverse stakeholders in discussions regarding the findings of the case studies, both through our international networks and through URC's field programs.

6.4 Framework of lessons on Psycho-social support for TB patients

A. Progress Against Expected Outcomes

Expected outcome: Lessons learnt from best practices in patient oriented psycho socio-economic support (PSS) as essential element of ambulatory treatment in PMDT.

Progress: A document including best practices from various programs around the world has been prepared by TB CARE I.

B. Activities and Results

Activity 1: Contributing to the comparison framework.

Results: TB CARE II collaborators provided input to the framework developed and disseminated by TB CARE I.

Activity 2: Collecting and describing best practices.

Results: TB CARE I collected information about best practices from DR-TB program sites around the world.

Activity 3: Contributing to the lessons learnt from best practices.

Results: The TB CARE II contribution to the best practices document included information from Partners In Health (PIH) supported sites in Russia and Peru.

C. Challenges

No significant challenges were experienced in the process of contributing to this activity.

D. Next steps/ Implications for Year 5 Activities

None anticipated at this time.

E. Dissemination of Lessons Learned

The document will be disseminated by TB CARE I once it is finalized.

VIETNAM FAST ACTIVITY

A. Background

Vietnam currently ranks 12th among the world's 22 high burden TB countries, with an estimated incidence rate of 144 cases per 100,000 population. The case detection rate for all forms of TB is 76%. The estimated burden of MDR TB is 4% among new (approximately 3000 cases) and 23% among retreatment cases (approximately 2100 cases). In 2013, there were 1204 laboratory confirmed cases of MDR TB, of which 948 cases were enrolled on treatment, meaning that a great proportion of estimated MDR TB cases were not diagnosed and enrolled on treatment.

Quang Nam Province is located in the South Central Coast region of Vietnam, 821 km from Hanoi. The province has two cities, Tam Ky and Hoi An, and 16 districts. With a population of approximately 1.4 million, it reports 1,600 cases of TB annual. Approximately 70% of TB cases were diagnosed and initiated treatment at Quang Nam Provincial Hospital of TB and Lung Disease (PHTB&LD) with a 182-bed capacity. However, most of those cases were transferred to district TB control teams for registration and reporting to the NTP. The PHTB&LD has served as an MDR TB treatment initiation site with 8-bed capacity since 2011. In October 2013, a four-module Xpert MTB/Rif machine and cartridges, supported by UNITAID, was installed at the PHTB&LD. Turnaround time from specimen collection to notification for drug sensitive and resistant TB has subsequently dropped from 10 days to approximately 2 days.

Nam Dinh is also a coastal province, located in the Red river Delta in the North of Vietnam, 90 km from Hanoi. The province has one city, Nam Dinh, and 9 districts. With a population of approximately 1.8 million, it reports 1,900 cases of TB annual. Nearly a haft of all TB cases was diagnosed at the PHTB&LD with 160-bed capacity. Most of those diagnosed TB cases were registered and reported to the NTP by Nam Dinh PHTB&LD. Therefore, management of TB cases diagnosed at Nam Dinh PHTB&LD is stricter than that in Quang Nam PHTB&LD. Nam Dinh PHTB&RD sent specimens of MDR-TB suspects to reference labs in Hanoi for MDR TB detection. Average turn-a-round time from specimen collection to test result receipt is about 7 to 10 days, sometimes longer due to shortage of test kits. Serving as an MDR TB treatment initiation site with 8-bed capacity since 2011, the PHTB&LD initiates treatment based on the received test results for MDR TB patients. Nam Dinh PHTB&RD expects to receive a 4-module Xpert machine from support of the Global Fund Round 9 Phase 2 in December, 2014.

B. Introducing FAST strategy

In order to early detect and diagnose TB and MDR TB cases for early and effective treatment initiations by strengthening patient screening and triaging at OPD and ICU, and patient tracking and management systems, the USAID TB CARE II Project assisted to introduce the *FAST* strategy in Quang Nam and Nam Dinh PHTB&LD in early 2014. *FAST* stands for **F**inding TB and MDR TB suspects **A**ctively, **S**eparating them safely, and initiating effective **T**herapy early. The *FAST* strategy is an infection control strategy aimed at reducing TB transmission among both health care workers and patients in the healthcare facilities and in the community.

C. Activities and Results

Pre-Implementation Phase

Pre-implementation quantitative and qualitative assessments were conducted with healthcare personnel who will be involved in the FAST strategy, and work-plans, protocols and data collecting, monitoring and managing tools were discussed, developed and revised to address any

foreseeable challenges with the strategy's implementation at both PHTB&LD. The procedure took long time and great effort for development and refinement of those documents and tools but they fitted to each PHTB&LD and gained commitment from both leaders and staff, critical for success of the strategy implementation.

One-day trainings were provided to about 50 health care staff at each PHTB&LD. The training provided science related to FAST strategy development; FAST strategy; protocol implemented at each PHTB&LD; role play of FAST implementation process; review and practice of filling in patient information form. Use of patient information form was then piloted at the OPDs with direct observations of TB CARE II staff to provide feedback for form refinement and screening quality improvement. On-site training on using the MS Access database including patient information form entry, different data sources merge, data cleaning and report generation were provided to the hospital staff.

One-day training at Quang Nam PHTB&LD

Group working at Quang Nam PHTB&LD

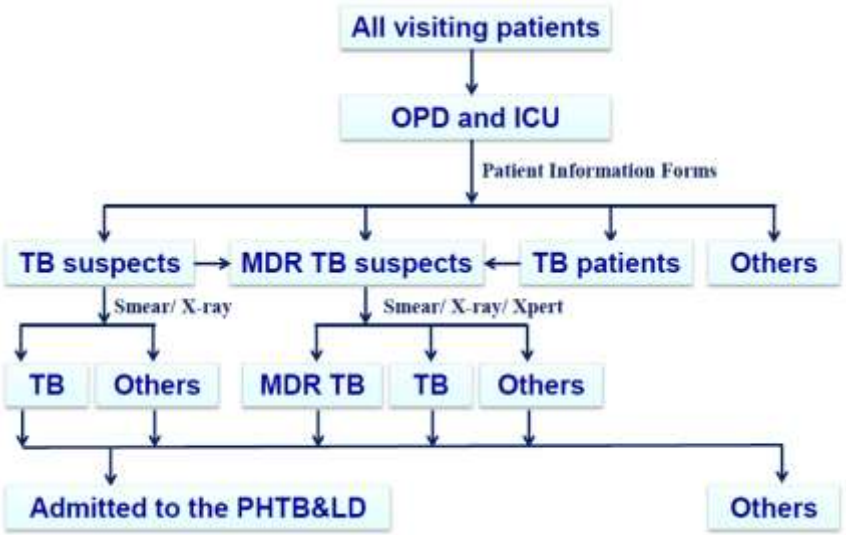
Role play of FAST implementation process at Nam Dinh PHTB&LD

Implementation Phase

Reduced infection transmission at OPDs and ICUs. Masks were provided to patients visiting OPDs and ICUs – points of entry, which usually are crowded with undiagnosed and unsuspected cases and people with other diseases, at both PHTB&LD to reduce dispensing infectious germs into the air.

Improved screening and triaging of visiting patients. Staff at OPDs and ICUs, points of entry of both PHTB&LD, used the patient information forms to capture and document patients' hospitalization history, previous TB treatment, TB exposure, lab tests from referring facilities on a standardized form (see figure 1). Patients were divided into four main categories for appropriate test request and triaging to clinical wards.

Figure 1: *FAST* implementation algorithm



Thousands of visiting patients were screened with the patient information form at OPDs and ICUs. Using the forms improved doctors' patient classification, appropriate test requests and better diagnosis at the OPD and ICU. Daily use of the patient information form also improves skills and habits of staff asking for and using important information on patient history and symptoms.

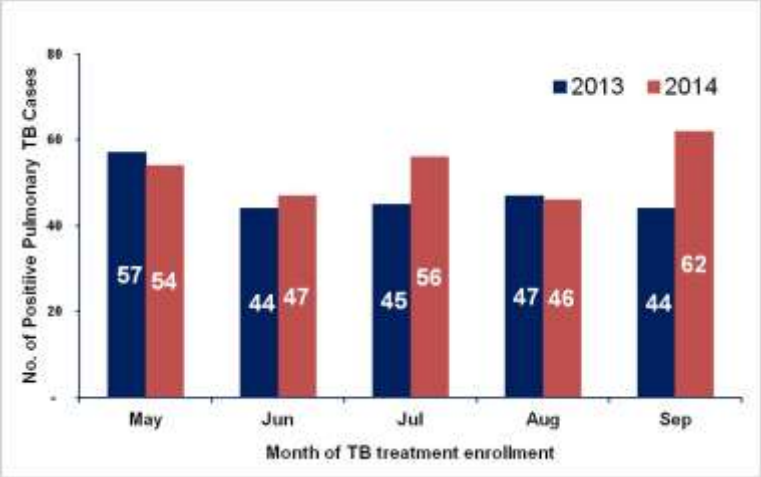
Table 1: Patients screened and diagnosed with TB and MRD-TB in Nam Dinh and Quang Nam PHTB&LD

No.	Indicators	Nam Dinh (Apr-Sep)	Quang Nam (May-Sep)	Total
1.	No. of patients screened with a patient information form	2444	3662	6106
2.	No. of TB suspects identified	1610	2816	4426
3.	No. of MDR-TB suspects identified	24	147	171
4.	No. of TB patients diagnosed	428	415	843
5.	No. of MDR-TB patients diagnosed	11	17	28

6.	No. of MDR-TB patients started MDR-TB treatment	11	16	27

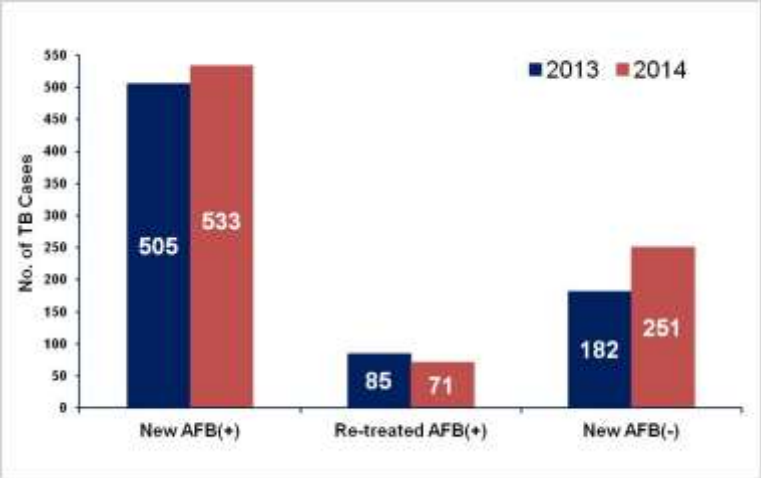
As a result of Xpert use, complemented with *FAST* implementation, Quang Nam PHTB&LD saw a 12% increase in the number of pulmonary TB cases diagnosed in 2014 compared with the same months of 2013 (Figure 3).

Figure 3: Increased number of Positive Pulmonary TB Cases in Quang Nam PHTB&LD, May - September , 2014



Without Xpert onsite, Nam Dinh PHTB&LD also gained a 11% increase in the number of pulmonary TB cases diagnosed in the period of April – September, 2014 compared with the period of 2013 (Figure 4).

Figure 4: Increased number of Pulmonary TB Cases in Nam Dinh PHTB&LD, April - September , 2014



Active detection of TB suspects who were in contact with MDR TB patients. Both PHTB&LD provided counseling to MDR TB patients who were hospitalized or paid check-up visits to the

hospitals to actively find their contacts who might have TB symptoms, using MDR-TB contact information form. The assigned OPD staff contacted and encouraged the identified contacts to visit the hospitals for medical examination with invitation letters and phone calls and kept track of their visits.

Capacity strengthening: Staff capacity was continuously strengthened to monitor implementation of the *FAST* strategy and manage and utilize patient data through training and technical assistance.

Two trainings on MS Access database were provided to about 30 health care staff at Quang Nam PHTB&LD by TB CARE II staff in July and September, 2014. The training provided basic knowledge of structure, design and utility of a MS Access database to health care staff so they became familiar with use of the database and would take on the database administration in the next year. Gradually taking on the database administration is critical for Quang Nam PHTB&LD since the hospital has used the database for better recording, reporting, analyzing and managing all visiting patients.

Photo taken by Lien Nguyen, URC

Monitoring and Evaluation:

With great experience from designing and using simple MS Access databases to improve monitoring, reporting and management of TB-HIV and PPM activities in Nam Dinh province since 2010, use of MS Access databases for management of visiting patients were discussed and supported by both PHTB&LD. A patient information form was designed to include necessary information for monitoring and reporting PPM activities. All the forms, after being filled in by OPD and ICU staff, were entered into the MS Access database. The MS Access databases were monthly merged with current data recording systems such as Medisoft, Vitimes and MS Excel sheets to obtain complete patient information from registration at the points of entry to the discharge. The MS Access databases generated reports for monitoring FAST implementation, PPM reports and feedbacks to referring facilities, and other hospital reports for supervision. The staff's effort in filling patient information form with improved quality and data entry and use of the MS Access database greatly facilitated monitoring and reporting at both PHTB&LD.

Each PHTB&LD organized routine meetings to review and improve quality of patient information form, resolve issues which had arisen, review performance indicators and strengthen collaboration among departments. TB CARE II staff paid field visits to both Nam Dinh and Quang Nam PHTB&LD to monitor activity implementation, participate in monthly meetings and provide on-site technical assistance.

Key indicators for monitoring and reporting and their reporting frequency were discussed and agreed.

- Number of incoming patients screened with a patient information form
- Number of TB suspects identified
- Number of MDR-TB suspects identified
- Number of TB patients diagnosed
- Number of MDR-TB patients diagnosed
- Number of MDR-TB patients started MDR-TB treatment

D. Challenges

- The Vietnamese Government administrative procedure for approving a revised Certificate of Operation Registration including FAST project in Nam Dinh province and adding Quang Nam as a project site for FAST took a very long time. This lengthy procedure limits implementation of FAST activities as well as many other projects in Vietnam.
- Procuring the Xpert funded by Global Fund Round 9 Phase 2, carried out by the NTP took much longer than expected. The expected time for receipt of the Xpert machine at Nam Dinh PHTB&RD has been changed from late 2013 to a new date of December 2014.
- Shortage of manpower works for both PHTB&LD. Each staff has multiple duties.

E. Next steps/ Implications for Year 5 Activities

- Early detection and treatment initiation of TB and MDR-TB patients: Continue to improve the quality of TB screening and triaging for visiting patients; Increase active detection of TB suspects among those having exposure to MDR-TB patients; Speed up the administrative process to increase availability and earlier access to Xpert tests supported by *FAST* project to effectively and rapidly diagnose TB and MDR-TB cases.
- Capacity strengthening: Continue to strengthen capacity to monitor implementation of the *FAST* strategy and manage and utilize patient data through training and technical assistance.
- Adaptation of IEC materials: Locally adapt useful IEC materials.
- Monitoring and Evaluation: Continue to support organization of weekly and monthly quality review meeting for involved leaders and staff to improve case detection and treatment initiation and data completeness, accuracy, exchangeability and utility.

F. Dissemination of Lessons Learned

- The TB CARE II team took a great effort and time to develop individualized work-plans, protocols and data collecting, monitoring and managing tools but they were products of and fitted to each PHTB&LD. The procedure gained commitment from both leaders and staff, critical for success of the strategy implementation.
- Operation of an Xpert machine onsite, complemented with introduction of the *FAST* strategy this year, Quang Nam PHTB&LD saw an increase in detection and diagnosis of TB and MDR TB cases over the same period of last year – cases that might have otherwise gone undetected or have greater delay in diagnosis and treatment. It suggested

a great need for onsite accessibility to Xpert machine at the PHTB&LD. Early evidence from Quang Nam PHTB&LD suggested that increasing earlier access to Xpert testing technology has the potential to more rapidly and accurately diagnose TB and MDR TB cases there.

- Using Patient Information Form, a simple tool, at the OPD and ICU to help standardization and documentation of hospitalization history, previous TB treatment, TB exposure, lab tests from referring facilities of visiting patients to improve patient classification and test requests at entry points of the PHTB&LD.
- The interventions improved overall TB patient tracking, management and reporting systems. The MS Access database greatly facilitated routine monitoring of the number of TB and MDR cases diagnosed and enrolled into treatment and times from patient registration at various entry points and lab test result to treatment initiation.
- The patient tracking system helped more easily detect missed opportunities for earlier diagnosis and effective treatment to follow up and improve performance of the systems.
- With strengthened patient screening, triaging, tracking and managing system to improve early TB and MDR TB case detection and treatment, the *FAST* strategy contributes to make both sites safer and healthier for patients and staff.

ADMINISTRATION OF CORE ACTIVITIES

Lessons and Administrative Best Practices

TB CARE II continued to develop materials, including technical briefs and reports, and publish them on the tbcare2.org website. The Program Management Support Group has also sought out other methods to disseminate information and materials produced by the project, such as monthly email updates to all TB CARE II partners, and by attending prominent conferences and meetings such as WHO STAG and the IUATLD World Conference held in Paris.

Compared to Years 1-3, TB CARE II was able to efficiently close out more activities from prior years resulting in less overlap with new, Year 4 activities. In addition, start-up of Year 4 activities took place with little delay.

Administrative Challenges

There was no Joint Strategic Meeting during Year 4, which made it more challenging than usual to develop core activities for next year. However, TB CARE II partners maintained contact with USAID and other technical partners via phone calls, email, and smaller in-person meetings to discuss progress of current activities and planning for new activities.

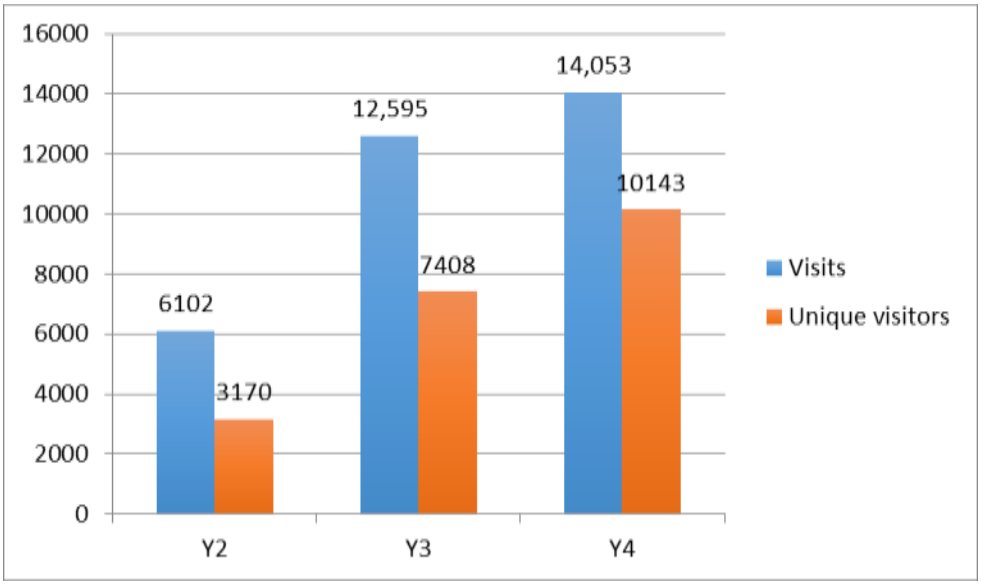
Environmental Monitoring and Mitigation Activities

TB CARE II conducted an initial environmental review alongside the development of the Year 4 core workplan, and continued to communicate with consortium members during the course of the year to provide information on the project's environmental monitoring process and to follow for all activities at the country and core levels. No activities in the core workplan were identified as carrying potential environmental threats, and as a result an Environmental Monitoring and Mitigation Plan was not developed for the core workplan.

APPENDIX

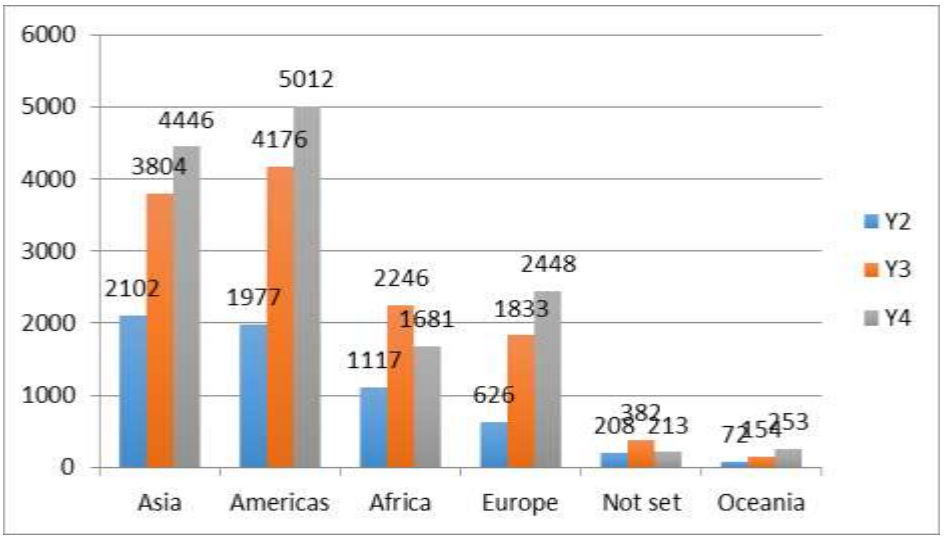
Visitor data is derived from the website's Google Analytics account. Webinar data is derived from Adobe Connect reports. Geographical divisions are according to the United Nations.

Number of Visits and Unique Visitors – Y2 to Y4 Comparison



Site traffic and number of unique visitors continues to increase. The number of unique visitors from Y3 to Y4 increased by 37%. Page views decreased from a high of 42,283 in Y3 to 33,039 in Y4. This is likely due to a greater proportion of the site's content being static in Y4 as there were no PMDT Fellowships, fewer new clinical case studies, and only one new resource published. The webinars remain the most popular activity of the DR-TB Training Network.

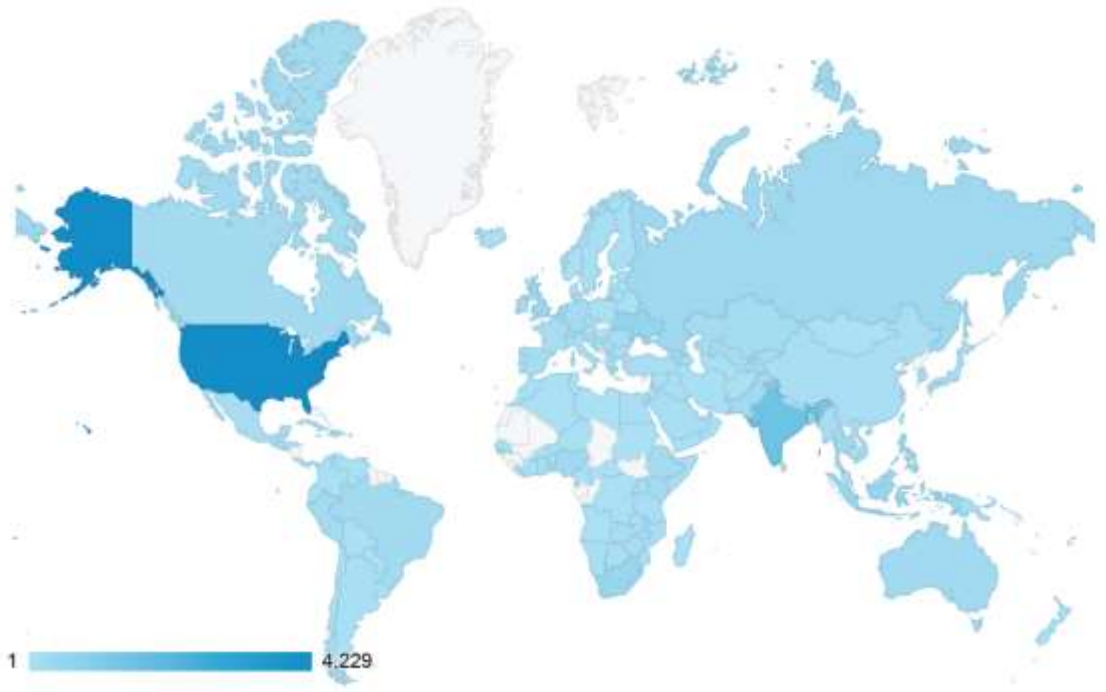
Visit Origin by Continent – Y2 to Y4 Comparison



Visits have increased from Asia, the Americas, Europe, and Oceania but have decreased from Africa. The reason for the decrease in Africa is unclear. The Pediatric DR-TB webinars drew a greater proportion of participants from North America and Northern and Western Europe compared to past webinars, possibly

a reflection of the global need for more information in this area, whereas past topics focused more on the basics of DR-TB management which may have attracted more clinicians in nascent DR-TB programs. Regular and affordable access to the internet (and high bandwidth connections for live participation in webinars) is also likely a limiting factor in many African countries.

Visit Origin by Country – Y4



Visits originated from 158 countries in Y4 with the top 5 including: U.S.A., India, Ukraine, Indonesia, and South Africa.

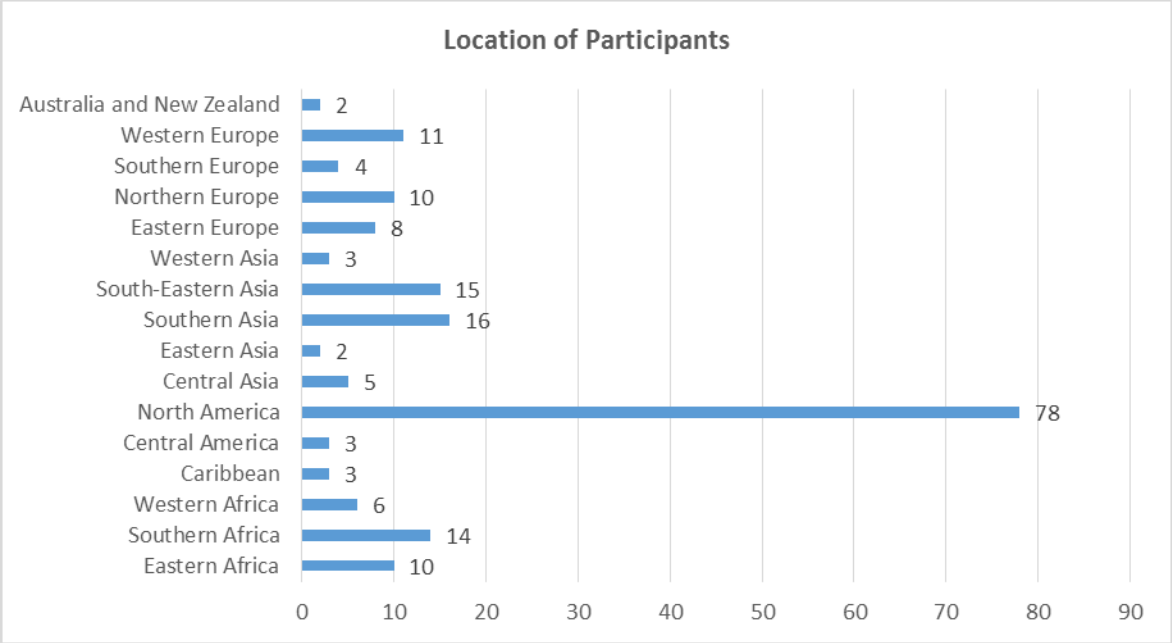
Characteristics of Y4 webinar participants

Participants completed a registration questionnaire via Adobe Connect.

Series 1: Pediatric DR-TB Series

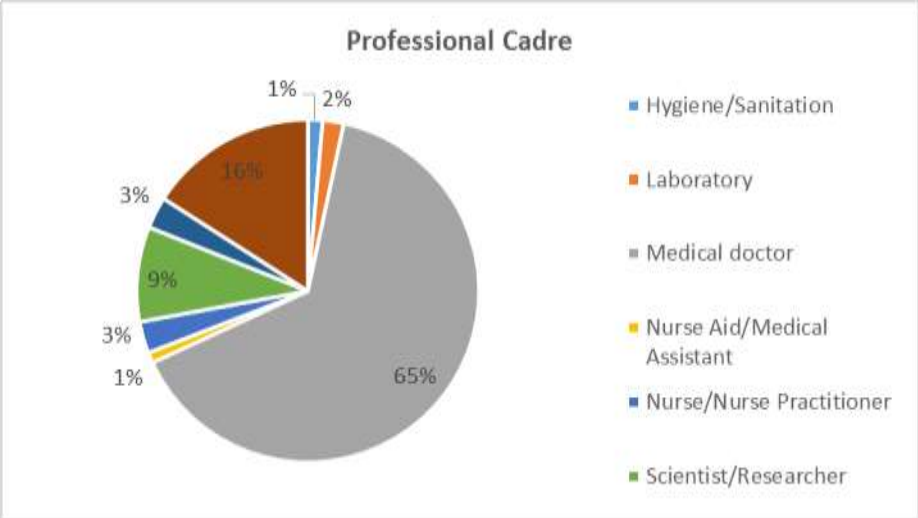
There were 6 webinars between March 14, 2014 and September 19, 2014 in English. The 271 participation events represented 198 individuals.

Location of 198 unique participants



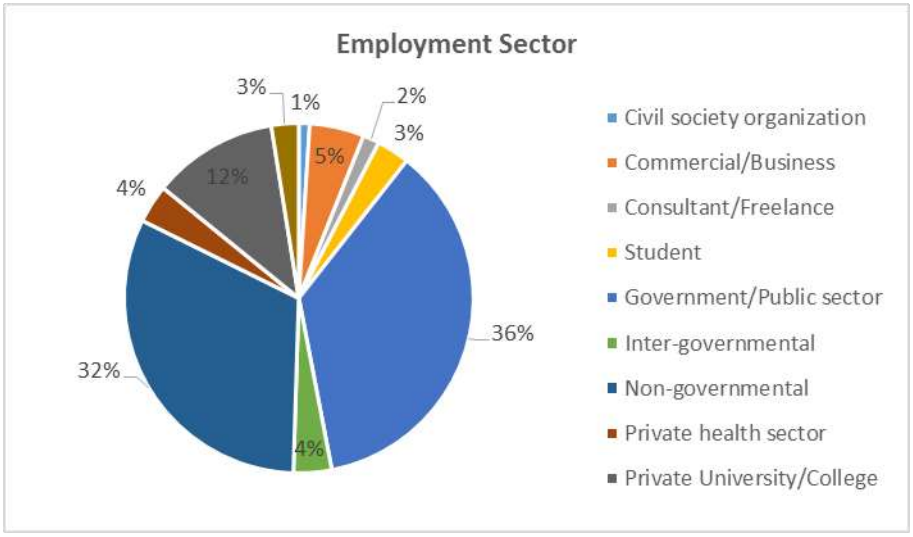
The Americas were well-represented with 45% of the participants; Asia followed with 21%. In total, 52 countries were represented.

Professional cadre of 198 unique participants



The majority of participants were medical doctors.

Employment sector of 198 unique participants

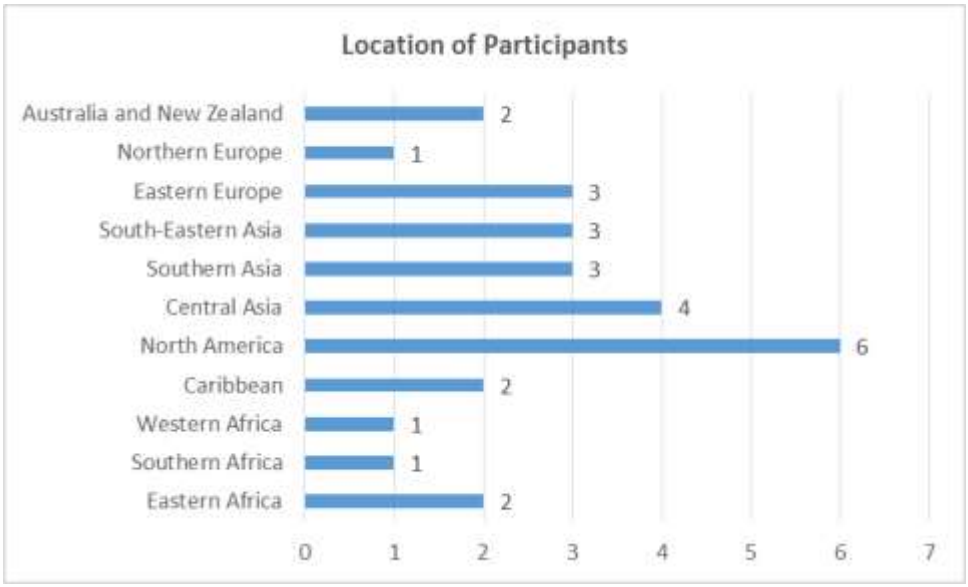


The two sectors most represented were those employed by governments/public sector and NGOs.

Series 2: TB Infection Control

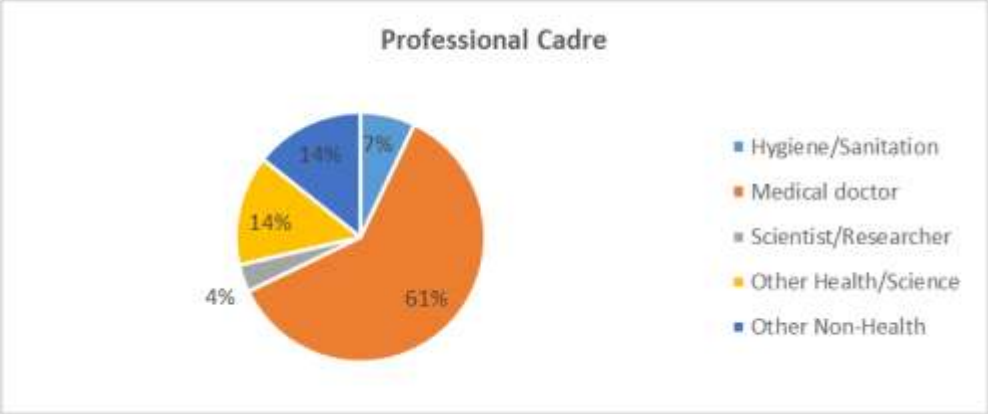
There were 3 webinars on technical infection control topics such as building design and the use of UVGI between June 16 and 24, 2014 in English. There were 39 participation events representing 28 individuals.

Location of 28 unique participants



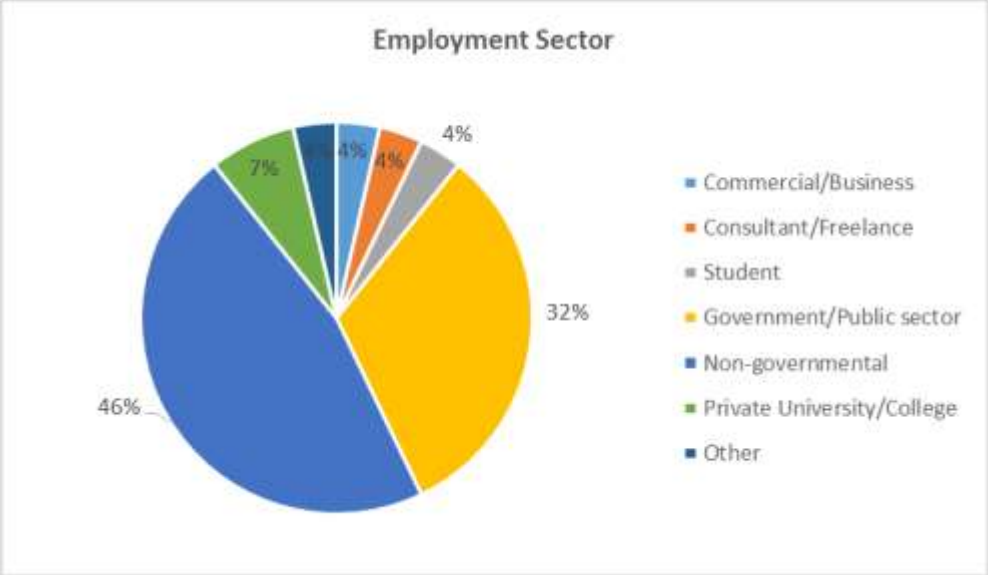
In total, 18 countries were represented.

Professional cadre of 28 unique participants



The majority of participants were medical doctors.

Employment sector of 28 unique participants

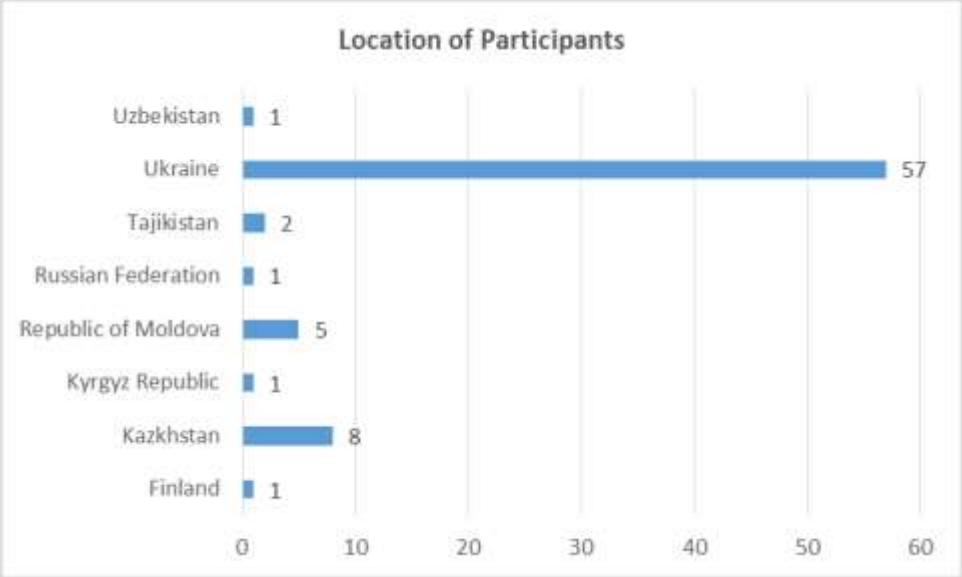


The two sectors most represented were those employed by governments/public sector and NGOs.

Series 3: TB Infection Control

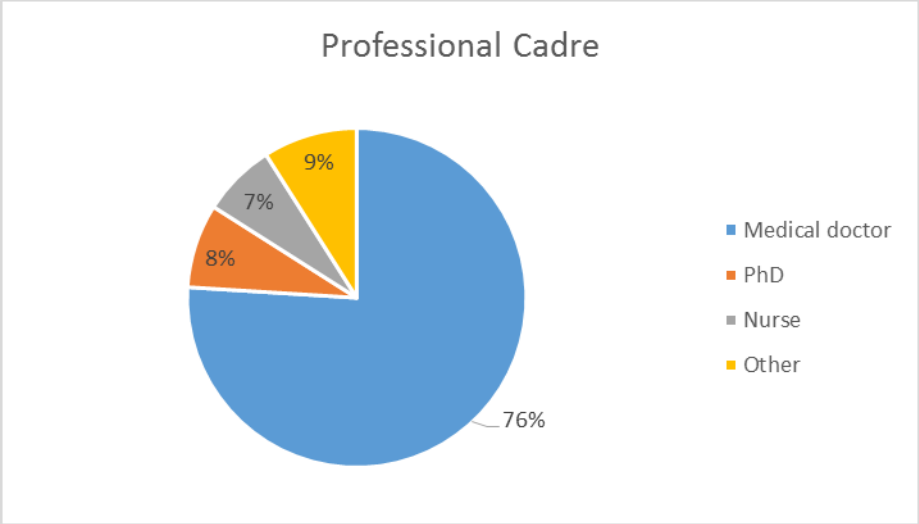
There were 4 webinars on technical and programmatic infection control topics and 1 Q&A/dialogue webinar between May 18 and July 16, 2014 in Russian. Registration data was collected from 147 participation events representing 76 individuals, however, 3 individuals from Ukraine reported that for one of the webinars the screen was being projected and they were watching with colleagues. The additional number of attendees was 52 but no registration data is available so they are not included in the demographic analysis.

Location of 76 unique participants



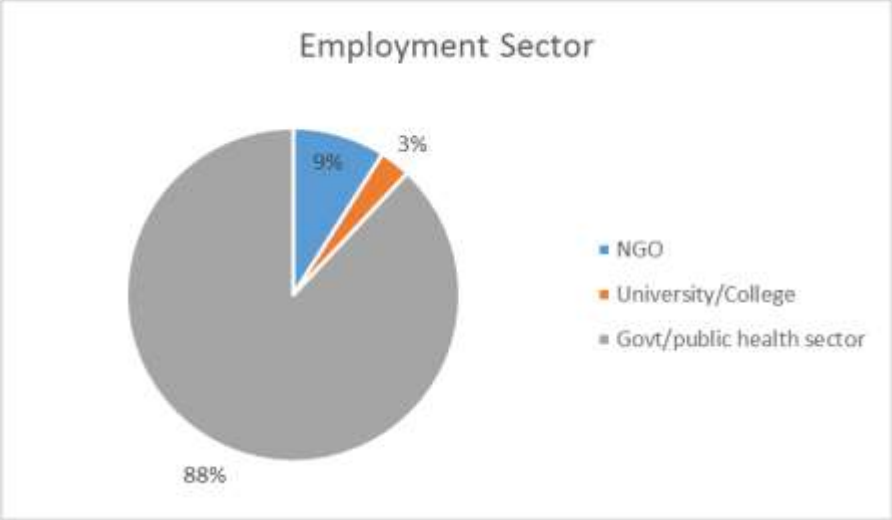
In total, 8 countries are represented.

Professional cadre of 76 unique participants



The majority of participants were medical doctors.

Employment sector of 76 unique participants

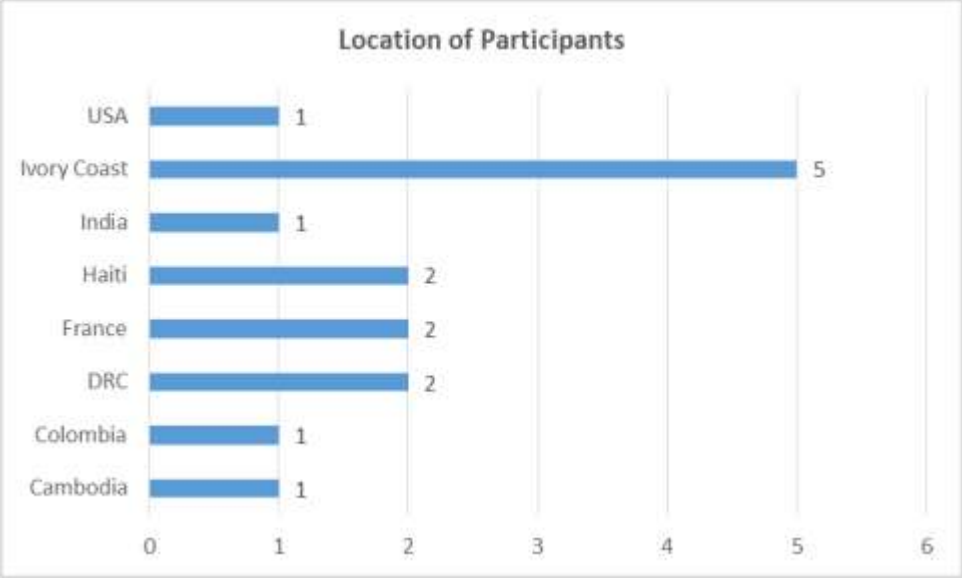


The sector most represented is the governments/public sector.

Series 4: MDR-TB Basics

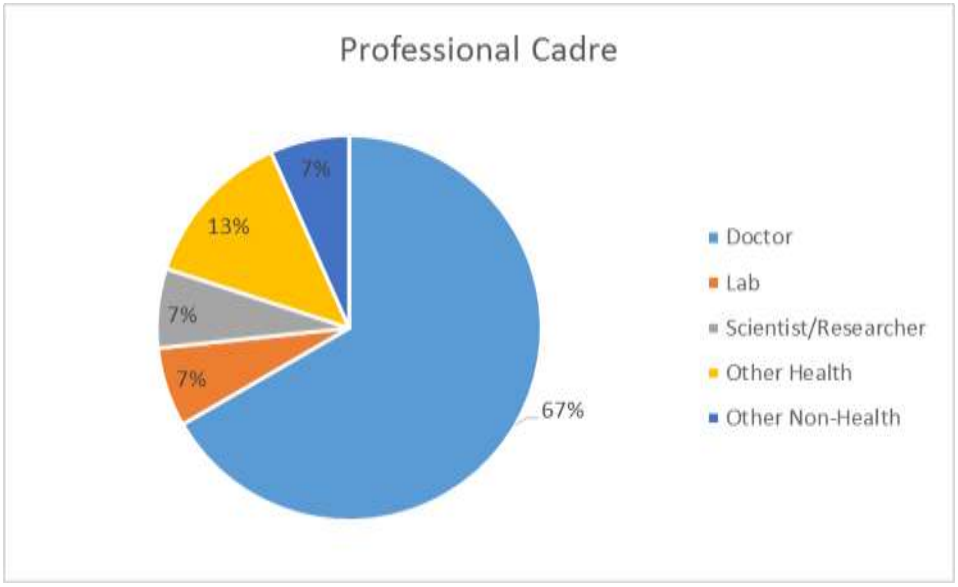
There was 1 webinar covering the basics of DR-TB management on May 18 and July 16, 2014 in French. Registration data was collected from 15 participants.

Location of 15 unique participants

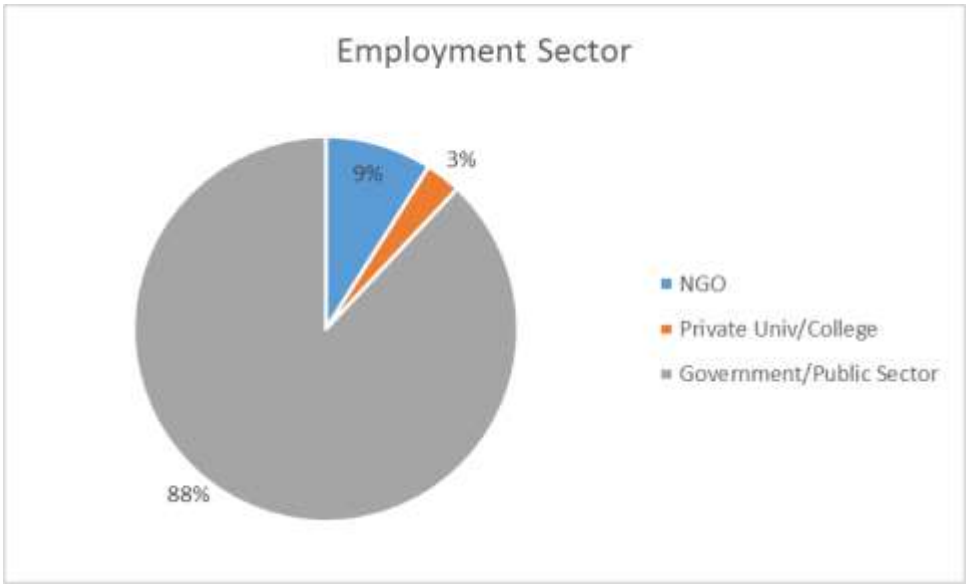


In total, 8 countries are represented.

Professional cadre of 15 unique participants



Employment sector of 15 unique participants



Download Data

Webinars	Presentation downloads Y4	Presentation downloads Ever	Views on YouTube™ (as of Nov 7, 2014) Y4
2012 Drug-resistant tuberculosis: A historical overview	34	330	216
2012 Management of side-effects during MDR-TB treatment	67	303	153
2012 Second line medications for MDR-TB treatment; new drugs in the pipeline	51	224	104
2012 Basics of transmission control in an era of MDR-TB treatment	15	250	213
2012 Amplification and development of drug resistance: An overview	23	178	125
2012 Designing an MDR-TB treatment regimen	19	169	
2013 Course Introduction	25	121	17
2013 An overview of TB laboratory strengthening	23	101	72
2013 Treatment of MDR/XDR-TB: Patient selection and regimen design	32	115	85
2013 Reducing TB transmission in high-burden settings	18	73	39
2013 Drug management for program implementation: how to start and expand	11	42	31
2013 Community-based care for MDR-TB	15	58	26
2013 Quality of DR-TB care: activities that improve adherence and overall treatment outcomes	3	3	17
2013 An overview of TB laboratory strengthening - RUSSIAN	17	91	77
2013 Treatment of MDR/XDR-TB: Patient selection and regimen design - RUSSIAN	11	44	31
2013 Reducing TB transmission in high-burden settings - RUSSIAN	12	39	26
2013 Drug management for program implementation: how to start and expand - RUSSIAN	9	30	19
2013 Community-based care for MDR-TB - RUSSIAN	9	26	40
2013 Quality of DR-TB care: activities that improve adherence and overall treatment outcomes - RUSSIAN	23	50	12
2014 Demonstration of Gastric Aspiration Technique in Children	20	20	297
2014 Regimen Design and Dosing for Children with Drug-Resistant TB: A Case-Based Discussion	26	26	206
2014 Household Considerations in the Management of Children with DR-TB: Contact Tracing and Infection Control	15	15	24
2014 Adverse effects and adherence in children treated for MDR-TB	18	18	153
2014 Pediatric DR-TB Meningitis: A Case-Based Discussion	6	6	156

2014 Raising Voices: Advocacy Issues in Pediatric DR-TB	1	1	24
2014 TB IC: administrative controls and the FAST strategy	20	20	36
2014 TB IC: building design, engineering, and respiratory protection	18	18	53
2014 TB IC: UVGI - planning, application, safety, and maintenance	8	8	89
2014 MDR/XDR-TB diagnostic approaches and considerations - FRENCH	4	4	28
2014 TB transmission in hospitals: theoretical and administrative control measures - RUSSIAN	13	13	107
2014 Accessible and effective infection control measures: natural ventilation and UVGI - RUSSIAN	8	8	26
2014 How to organize an effective program of individual respiratory protection? - RUSSIAN	7	7	62
2014 Evaluation of TB transmission risk and development of infection control plan - RUSSIAN	7	7	49
2014 Dialogue on TB infection control questions and clinical-program management of DR-TB - RUSSIAN	2	2	48
TOTAL	**590**	**2420**	**2661**

The webinars were not posted to the DR-TB Training Network YouTube™ channel until 2014; one video could not be transferred from Adobe Connect as it was damaged. It remains viewable on Adobe Connect but data is not available.

Resources	**Y4**	**Ever**
2012 Community-Based Care for Drug-Resistant Tuberculosis: A Guide for Implementers	54	161
2012 Tracking Tool for TB Patients who meet the Criteria to be Screened for MDR-TB	8	45
2012 Training Course on the Clinical Management of Multidrug-Resistant TB - Participant Manual	45	117
2012 Training Course on the Clinical Management of Multidrug-Resistant TB - Facilitator Manual	65	135
2012 Training Course on the Clinical Management of Multidrug-Resistant TB - Pre-Test	52	91
2012 Training Course on the Clinical Management of Multidrug-Resistant TB - Post-Test	29	68
2012 Training Course Session 3 - Identifying Cases of MDR-TB	31	96
2012 Training Course Session 8 - MDR-TB in Children	37	74
2012 Management of Multidrug-Resistant Tuberculosis in Children: A Field Guide	42	63
2013 FAST TB Infection Control Strategy Booklet	135	168
2013 FAST TB Infection Control Strategy Job Aids	101	114
2013 FAST TB Infection Control Strategy Posters	272	303
2013 The PIH Guide to the Medical Management of Multidrug-Resistant Tuberculosis (manual only; posted March 2014)	57	57
2013 The PIH Guide to the Medical Management of Multidrug-Resistant Tuberculosis (forms only)	23	23
TOTAL	**951**	**1515**